GP30F

SERVICE MANUAL

REVISION 0 JULY 1995

Canon
FY8-13DG-000

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CANON FAX BOARD-B1 REV. 0 JULY 1995 PRINTED IN JAPAN

I. FEATURES

1. Has a full range of basic, practical copier features.

① It is designed as a front-loading machine for space considerations.
② It can hold as may as 1,500 sheets of paper (500 x 2 cassettes + 50-sheet multifeeder). With the addition of a cassette feeding unit (option), it can supply as many as 1,500 (A4, B5, LTR) sheets of copy paper, making replenishment work less frequent.
③ It turns out as many as 30 copies per minute (A4, horizontal).
④ In addition to wide zooming of 25%–400%, it offers 6 reduction and 5 enlargement choices.
⑤ It offers many convenient features such as auto paper selection, auto ratio selection, binding mode, frame erasing mode, interrupting mode, and pre-heating mode.
⑥ It offers text mode, photo mode, and AE (auto exposure adjustment) mode to ensure copies that best suit the originals used.

2. Generates high-quality, highly detailed copies.

The GP30F has a resolution of 400 dpi and reproduces images in 256 gradations per pixel; moreover, Canon's AI technology ensures faithful reproduction of various types of originals.

3. Designed for system integration through connection to a Multi Device Controller.

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II. SPECIFICATIONS

A. Copier

1. Type

Body	Desktop
Copyboard	Fixed
Light source	Halogen lamp (65V, 180W)
Lens	Lens array
Photosensitive medium	OPC

2. System

Copying		Indirect electrographic
Charging		Corona
Exposure		By spot laser
Copy density adjustment		Auto or manual
Development		Dry (toner projection)
Pick-up	Automatic	2 cassettes
	Manual	Multifeeder (5 mm deep, approx.)
Transfer		Corona
Separation		Static electricity + curvature
Cleaning		Blade
Fixing		Heat roller (700W + 600W)
Original orientation	Book mode	Butted against the copyboard index
	DF mode	Center reference

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3. Performance

Type of original			Sheet, book, 3-D object (2 kg max.)
Maximum original size			A3/11" ×17"
Reproduction ratio	DIRECT		1 : 1 (±0.5%)
	REDUCE I		1 : 0.250 (±1.0%)
	REDUCE II		1 : 0.500 (±1.0%)
	REDUCE III		1 : 0.60 (±1.0%)
	REDUCE IV		1 : 0.707 (±1.0%)
	REDUCE V		1 : 0.816 (±1.0%)
	REDUCE VI		1 : 0.865 (±1.0%)
	ENLARGE I		1 : 4.000 (±1.0%)
	ENALRGE II		1 : 2.000 (±1.0%)
	ENLARGE III		1 : 1.414 (±1.0%)
	ENLARGE IV		1 : 1.224 (±1.0%)
	ENLARGE V		1 : 1.154 (±1.0%)
	ZOOM		1 : 0.250 to 4.000 (±1.0%)
Wait time			30 sec or less (at 20°C)
First copy			8 sec (A4, non-AE, 1st cassette, DIRECT)
Continuous copying			100 copies max.
Copy size	Cassette		Max.: A3/11" ×17" Min.: A5/STMT
	Multifeeder		Max.: 297×431.8 mm Min.: 105×148 mm (vertical only)
Paper type	Cassette		Plain paper (64 to 80 g/m^2), tracing paper (SM1), colored paper*
	Multifeeder		Plain paper (64 to 128 g/m^2), tracing paper (SM1, GNT80**), colored paper*, OHP film*, postcard*, label sheet*
	Duplex/ overlay	Auto	Plain paper (64 to 128 g/m^2), colored paper*
		Multifeeder	Plain paper (64 to 128 g/m^2), colored paper* (no overlay)

*As recommended by Canon.
**May be used, but may have poor feeding performance.

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Cassette	Claw	None
	General/ universal	55 mm deep (about 500 sheets of 80/gm^2 paper)
Multifeeder tray		5 mm deep (approx.; about 50 sheets of 80/gm^2 paper)
Copy tray		100 sheets (approx.; A3, 80 g/m^2 paper)
Non-image width	Leading/ trailing edge	2.5 ±1.5 mm in DIRECT; 6 mm or less in REDUCE/ENALRGE; 2.5 ±2.0 mm in overlay/two-sided
	Left/right	2.5 ±1.5 mm in DIRECT; 8 mm in REDUCE/ENLARGE; 2.5 ±2.0 mm in overlay/two-sided (w/ standard frame erasing on)
Auto clear		Provided (2 min standard; may be varied between 0 to 9 min in 1-min increments)
Auto shut-off		Provided (2 hr standard; may be varied between 1 and 24 hr in 1-hr increments)
Option	Feeder	RF-C1 Editor ADF-B1 Editor-A2 3m cable (for Editor-V) ADF-C1
	Sorter	Stapler Sorter-B2/Stapler Sorter Mounting Kit Stapler Sorter-C1 Sorter-C1 Multi Tray 7-A1 Stapler Sorter-D1
	Cassette Feeding Unit	Duplexing 2-Cassette Feeding Unit-G1 3-Cassette Feeding Unit-F1 2-Cassette Feeding Unit-J1 1-Cassette Feeding Unit-H1 Duplexing Cassette Feeding Unit-A1 PAPER DECK PEDESTAL-H1 PAPER DECK PEDESTAL WITH DUPLEXING-G1
	Others	Film Projector Control Card IV Face-Down Delivery Unit Retention Memory Multi Device Controller PS-GP Unit Image Processing Board

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4. Others

Operating environment	Temperature	7.5° to 32.5°C/45.5°F to 90.5°F
	Humidity	5% to 85%
	Atmospheric pressure	0.8 to 1.0 atm
Power supply		Serial numbers
	115V 60Hz	NEZ xxxxx
	230V 50Hz	QAS xxxxx SAJ xxxxx TAJ xxxxx UBM xxxxx
Power consumption	Maximum	1.5 kW or less
	Standby	0.206 kWh (reference only)
	Continuous copying	0.948 kWh (reference only)
Noise	Copying	74 dB or less (sound power level by ISO method)
	Standby	50 dB or less (standards satisfied)
Ozone		0.05 ppm or less (average); 0.10 ppm or less (max.)
Dimensions	Width	675mm/26.6 in
	Depth	669mm/26.3 in
	Height	714 mm/28.1 in (including RF-C1)
Weight (body only)		88.2kg/194.4 lb
Consumables	Copy paper	Keep wrapped to protect against humidity.
	Toner	Keep out of sunshine; keep it at 40°C, 85%.

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5. Copying Speed

Ratio		Size	Copy size	Copies/min
DIRECT		A3 (297X420mm)	A3	17
		A4 (210X297mm)	A4	30
		A5 (148.5X210mm)	A5	30
		B4 (257X364mm)	B4	19
		B5 (182X257mm)	B5	30
		A4R (297X210mm)	A4R	23
		B5R (257X182mm)	B5R	21
		A5R (210X148.5mm)	A5R	23
REDUCE	II	A3→A5	A5R	23
	III	A3→B5	B5R	21
	IV	A3→A4	A4R	21
		B4→B5	B5R	21
	V	B4→A4	A4R	22
		B5→A5	A5	30
	VI	A3→B4	B4	19
		A4→B5	B5	30
ENLARGE	II	A5→A3	A3	17
	III	A4→A3	A3	17
		B5→B4	B4	19
	IV	A4→B4	B4	19
		A5→B5	B5	30
	V	B4→A3	A3	17
		B5→B4	A4	30

Table 1-201 Copying Speed (copier only)

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Ratio	Size	Copies/min
DIRECT	LTR	30
	11X17	16
	LGL	19
	LTRR	24
	STMT	30
	STMT-R	23
REDUCE	LGL→LTRR	23
	11X17→LGL	20
	11X17→LTRR	23
	11X17→STMTR	23
	11X15→LTRR	23
ENLARGE	LGL→11X17	16
	LTR→11X17	16
	STMTR→11X17	16

Table 1-202 Copying Speed (copier only; pick-up from the multifeeder)

Specifications subject to change for product improvement.

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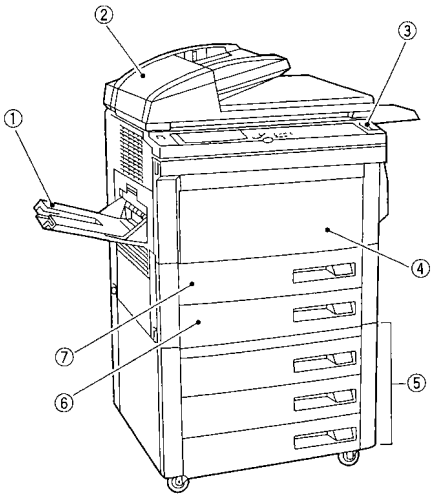
III. NAMES OF PARTS

A. External View



① Copy tray
② RF-C1 (option)
③ Control panel power switch
④ Front door
⑤ Cassette feeding unit (option)
⑥ Cassette 2
⑦ Cassette 1
⑧ Fixing assembly knob
⑨ Total copy counter
⑩ Control panel
⑪ Copyboard glass
⑫ Original tray
⑬ Multifeeder
⑭ Rear main power switch
⑮ Developing assembly
⑯ Feeding assembly releasing lever

Figure 1-301

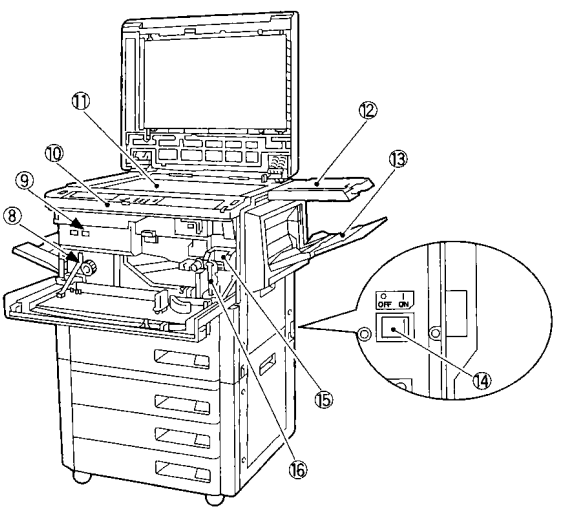


Figure 1-302

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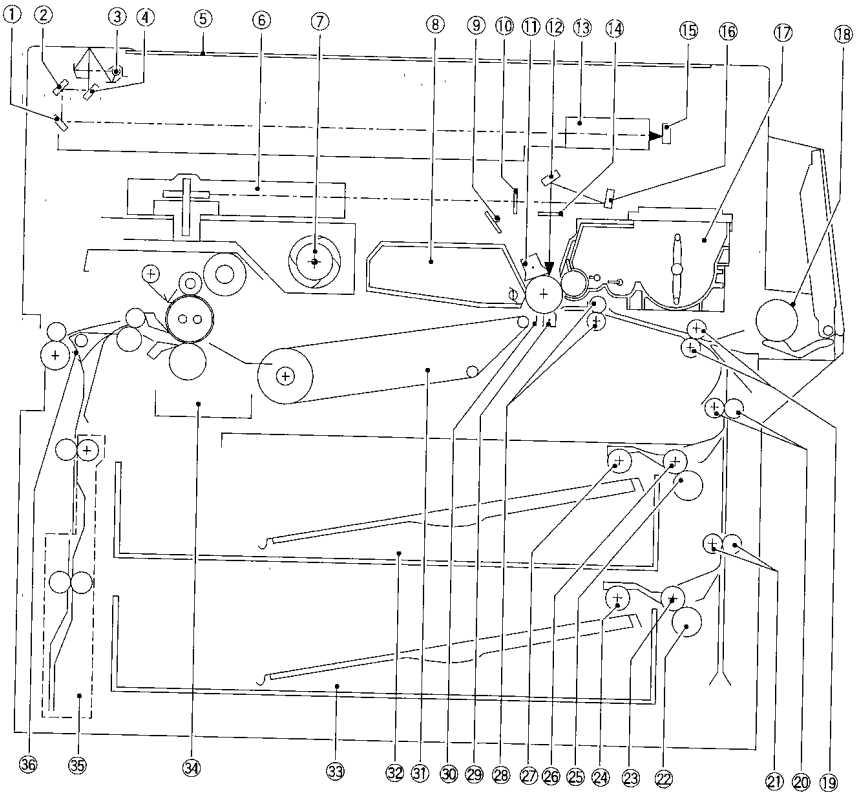
B. Cross Section



① No. 3 mirror
② No. 2 mirror
③ Scanning lamp
④ No. 1 mirror
⑤ Copyboard glass
⑥ Laser unit
⑦ Exhaust fan
⑧ Drum cleaning assembly
⑨ Pre-exposure lamp
⑩ Dust-proofing glass 1
⑪ Primary corona assembly
⑫ No. 2 laser mirror
⑬ Lens
⑭ Dust-proofing glass 2
⑮ CCD
⑯ No. 1 laser mirror
⑰ Developing assembly
⑱ Multifeeder assembly
⑲ Pre-registration roller
⑳ Vertical path roller 1
㉑ Vertical path roller 2
㉒ Cassette 2 separation roller
㉓ Cassette 2 feeding roller
㉔ Cassette 2 pick-up roller
㉕ Cassette 1 separation roller
㉖ Cassette 1 feeding roller
㉗ Cassette 1 pick-up roller
㉘ Registration roller
㉙ Transfer corona assembly
㉚ Static eliminator
㉛ Feeding assembly
㉜ Cassette 1
㉝ Cassette 2
㉞ Fixing assembly
㉟ Delivery vertical path assembly (option)
㊱ Delivery assembly

Figure 1-303

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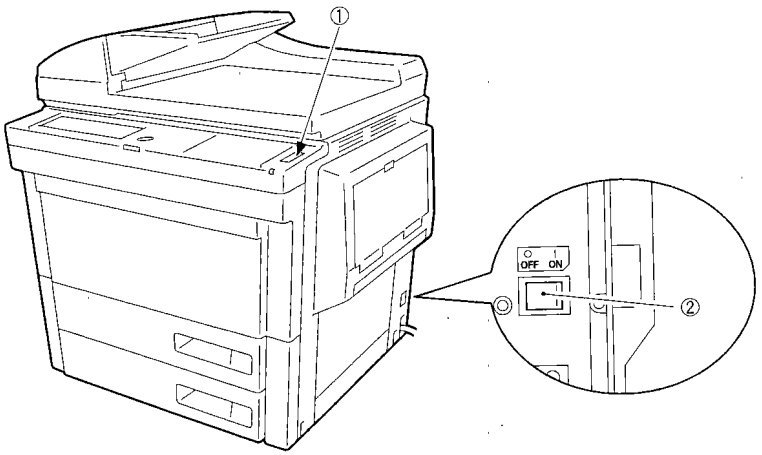
IV. OPERATION

A. Turning On the Power

The GP30F is equipped with two power switches: the rear main power switch and the control panel power switch. You can turn on the copier by turning on both switches.

Turn on the rear main power switch and then the control panel power switch in order when turning on the copier.



① Control panel power switch
② Rear main power switch

Figure 1-401

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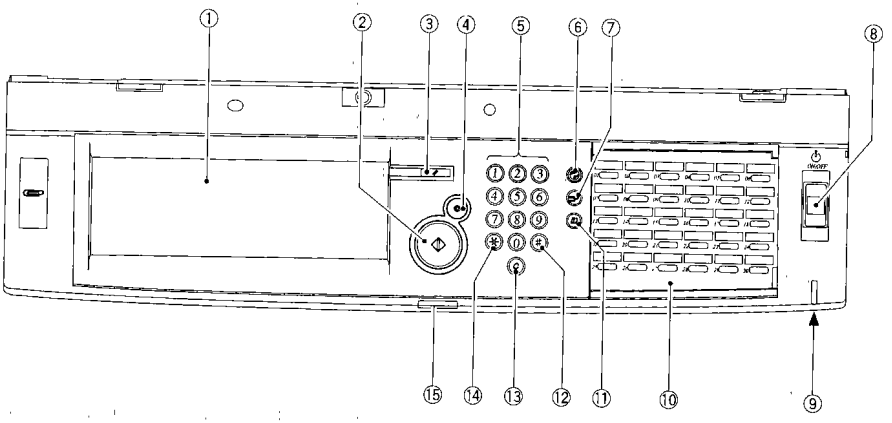
B. Control Panel



① LCD/touch panel
② Start key
③ Reset key
④ Stop key
⑤ Numeric keypad
⑥ Pre-Heat key
⑦ Interrupt key
⑧ Control panel power switch
⑨ Power indicator
⑩ One-touch keys
⑪ ID key
⑫ # key
⑬ Clear key
⑭ * key
⑮ Status indicator

Figure 1-402

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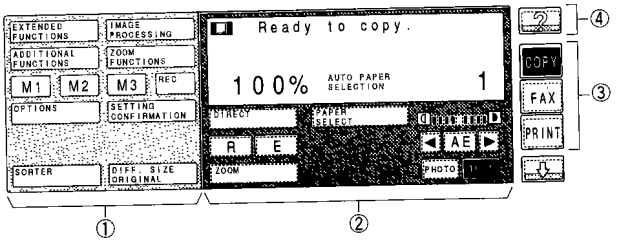
■ Touch Panel



① Extended Control Panel
- Use it to select extended functions for copying and faxing.

② Main Control Panel
- Use it to make settings or to check machine conditions.

③ System Key
- Use it to switch among functions.
- Connecting the Multi Device Controller (option; external device) brings up other function keys.

④ Guide Display Key
- Use it to display the operation guide.

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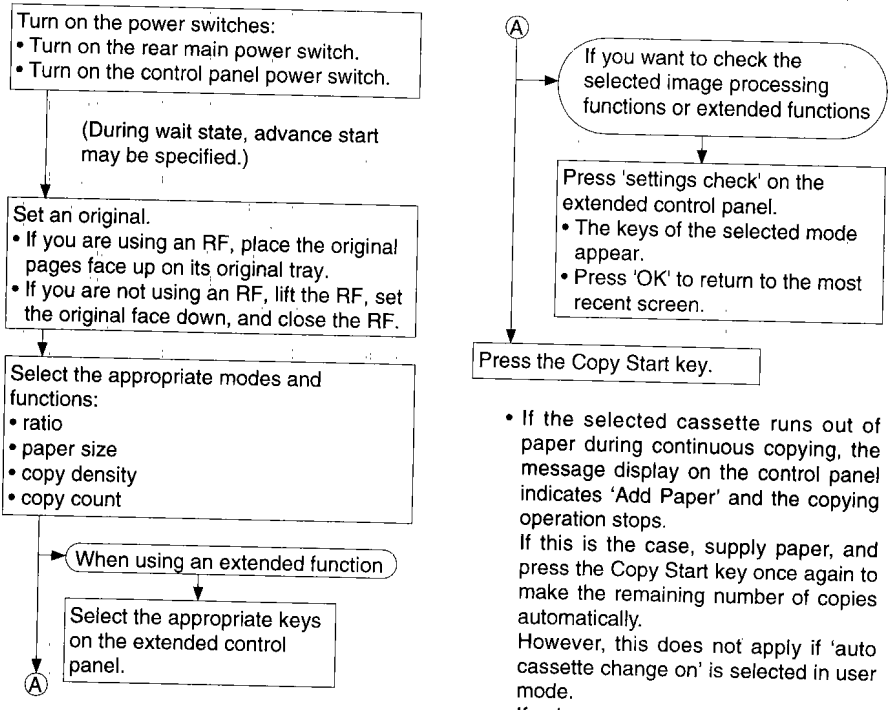
C. Basic Operation

1. Making Copies


Turn on the power switches:
• Turn on the rear main power switch.
• Turn on the control panel power switch.
(During wait state, advance start may be specified.)
Set an original.
• If you are using an RF, place the original pages face up on its original tray.
• If you are not using an RF, lift the RF, set the original face down, and close the RF.
Select the appropriate modes and functions:
• ratio
• paper size
• copy density
• copy count
When using an extended function
Select the appropriate keys on the extended control panel.
A
A
If you want to check the selected image processing functions or extended functions
Press 'settings check' on the extended control panel.
• The keys of the selected mode appear.
• Press 'OK' to return to the most recent screen.
Press the Copy Start key.

- If the selected cassette runs out of paper during continuous copying, the message display on the control panel indicates 'Add Paper' and the copying operation stops.
  If this is the case, supply paper, and press the Copy Start key once again to make the remaining number of copies automatically.
  However, this does not apply if 'auto cassette change on' is selected in user mode.
- If a jam occurs during copying operation, the message display indicates 'Jam', and copying operation stops.
  The copy count will indicate the remaining number of copies when the jam has been removed.
  If the copier is left alone for about 2 min after copying operation or key operation, it will return to standard mode (auto clear).
- The auto clear time may be varied in user mode.

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2. Operations Available During Copying Operation

① Stopping Copying Operation
To stop continuous copying, press the Stop key ◎ or the Reset key ▭. The copier stops operation after making the ongoing copy.

② Switching from AE (auto exposure) Mode to Manual Density Adjustment
You may switch from AD mode to manual density correction mode during continuous copying.
However, you cannot switch from manual density adjustment to AE mode during continuous copying.

③ Interrupting
You can use the interrupt function by pressing the Interrupt key.

Note:
During continuous copying, the copier will not accept keys other than the Stop key ◎, Reset key ▭, Interrupt key ▭, and the Copy Density key (manual mode).

3. Advance Start

You may select the advance start function when the copier is in the following states:

- wait state after power-on.
- wait state after pre-heat mode.
- cleaning the corona wire.
- wait state after removal of a jam.

Set an original during wait state, set the appropriate copy modes, and press the Copy Start key.

The start indictor changes from green (on) to orange (on) to indicate that the advance start function has been selected. (You cannot select the interrupt function.)

The copier will start making copies automatically as soon as it enters standby state.

You may de-select the start function by pressing the Stop key ◎ or the Reset key ▭.

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4. Interrupt Function

If you want to make a copy of an original while a large number of copies are being made of a different original, you may temporarily suspend the ongoing operation.

You may also suspend fax reception or printing operation to make a copy. The suspended fax receiving or printing operation will resume as soon as you de-activate the interrupt function.

1) Press the Interrupt key to select interrupt mode; you may select the following modes:
   - one-sided copying
   - copy count at 1 through 100
   - non-sort mode
   - manual mode
   - density (non-AE, AE)
   - reproduction ratio (may be auto reduction/enlargement)
   - cassette selection

   You cannot use a DF for the interrupt function.
2) Set an original, and press the Start key.
3) To release the interrupt function, press the Interrupt key once again.

5. Manual Two-Sided/Overlay Copying

You may make two-sided/overlay copies by manually feeding paper.

However, you must keep the following in mind when making two-sided/overlay copies:

① Do not change the orientation of the copy (rear and front of the face copied and the face to be copied).
② Make sure that the paper is not moist.
③ Make sure that the paper is not curled.
④ Cool the paper sufficiently after first copying; correct any curling before feeding it for second copying.
⑤ Make sure that the paper is of 64 to 128 g/m^2.
⑥ Remove any curling of postcards or thick paper (128 g/m^2) before feeding it for second copying.

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6. Pre-Heat Mode

A press on the Pre-Heat key during standby activates pre-heat mode, turning off the power indicator and other indicators except the Pre-Heat indicator on the control panel.

① During pre-heat mode, keys other than the Pre-Heat key will not be accepted.
② During pre-heat mode, the temperature of the fixing assembly is controlled in the same way as in standby.
③ During pre-heat mode, the laser scanner motor is stopped.
④ Pre-heat mode may be released by pressing the Pre-heat key once again.

Note:
During pre-heat mode, the copier will not accept commands from an external device.
To use the copier as a printer or to print out documents received over fax, be sure to de-activate preheat mode before doing so.

7. Using ID Mode

In ID mode, you will have to enter an ID number consisting of four digits to make copies; as many as 100 ID numbers may be stored, and copy counts (cumulative) may be displayed by ID number for keeping track of copy volume by group.

a. Storing ID Numbers
1) Press [user mode], (ID), Stop key (◇), and [user mode] in sequence.
2) Press [ID No. store], and press [OK].
3) Using [▲]/[▼], highlight a number and enter a 4-digit ID number using the numeric keypad.
4) Press [OK] and then (ID) to store the ID number; the ID No. Input screen appears.

b. Entering an ID Number
1) Enter an ID number you have stored on the ID No. Input screen.
If you made a mistake, re-enter the number.
2) Press (ID).
3) Check that the copier becomes ready for copying operation, i.e., the number you have entered has been verified as being one of the numbers stored.
4) Press (ID) to return to the ID No. Input screen once again.

c. Count Control
You can display copy counts (cumulative) according to ID numbers.
1) Press [user mode], (ID), stop (◇), and [user mode] in sequence.
2) Press [count control] and [OK].
3) Using [▲]/[▼], check the count corresponding to the appropriate ID number.

d. Clearing (resetting) Counts for All ID Numbers
1) Press [user mode], (ID), Stop key (◇), and [user mode] in sequence.
2) Press [count control], and press [OK].
3) Press [count all clear], and press [OK] to clear the counts of all ID numbers.

Note:
You cannot clear the counts on an individual basis.

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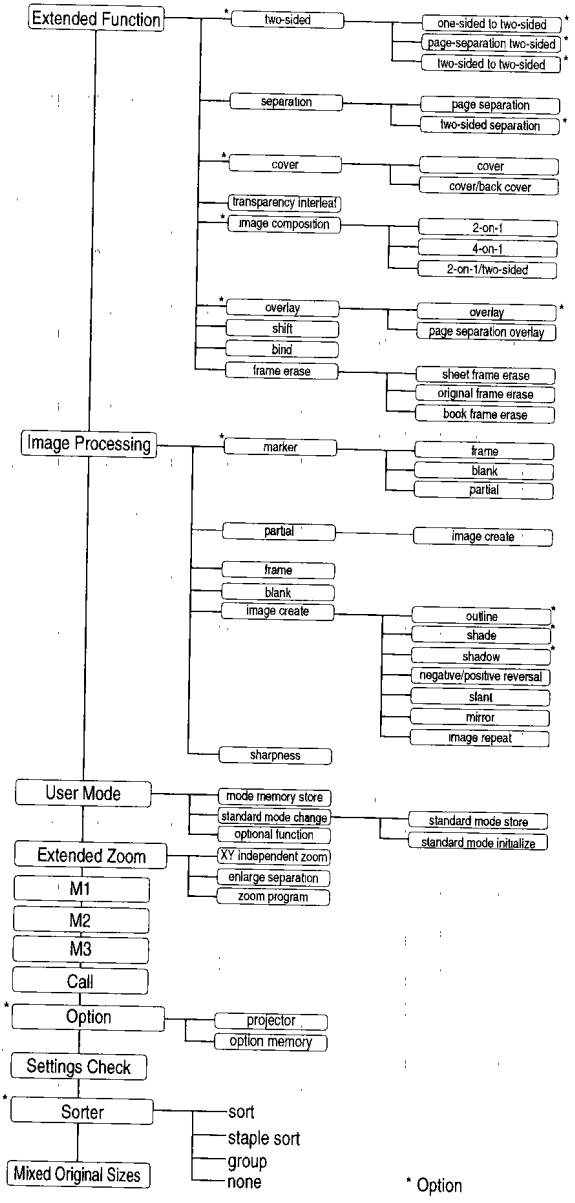
D. Extended Operations

■ Extended Control Panel Functions Diagram



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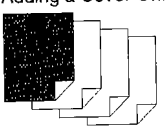
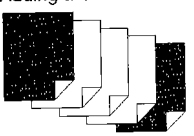
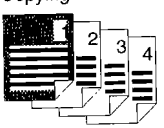
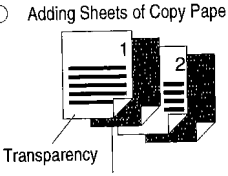
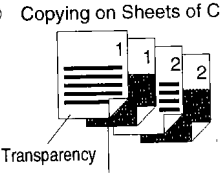
1. Functions

Key	Description
Extended function	———
Two-Sided	———
one-sided to two-sided page separation two-sided two-sided to two-sided	Effective only when a duplexing unit (option) is installed; copies images on both sides of copy paper.
Separation	———
page separation	Copies the left and the right pages of an open book on two separate sheets of copy paper.
two-sided separation	Automatically reverses a two-sided original, thereby copying both sides of the original on two separate sheets of copy paper; requires a feeder.
Cover	———
cover cover/back cover	Adds a cover(s) to a series of copies; requires a feeder. The covers must be set on the multifeeder. ① Adding a Cover Only  ② Adding a Cover and a Back Cover  ③ Copying on the Added Front and Back Covers 
Transparency Interleaf	Adds a sheet of copy paper between transparencies. The transparencies must be set on the multifeeder; a feeder may be used. ① Adding Sheets of Copy Paper  ② Copying on Sheets of Copy paper 

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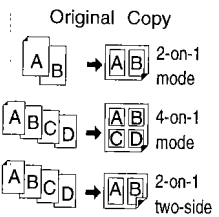
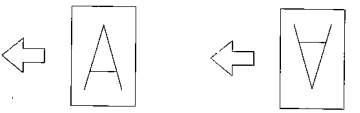
Key	Description
Extended Functions	———
Image Composition 2-on-1 4-on-1 2-on-1 two-sided	Two or four originals may be copied on a single sheet of copy paper by reduction; the following three modes of copying are available under the function:  **Reference:** 1. If a duplexing unit and an RF/ADF are installed, The three modes may be used if the original is A5, B5, A4, LTR, or STMT; for other sizes, only 2-on-1 mode is available. 2. If only an RF/ADF is installed, The original must be A5, B5, A4, LTR, or STMT and only 2-on-1 mode is available. 3. If only a duplexing unit is installed, Only 2-on-1 mode is available. **Caution:** You must orient the original as follows when using image composition mode with an ADF. 
Overlay	———
overlay page separation overlay	Images may be overlaid on the same face of copy paper in any of the following three modes: • making an overlay copy from two one-sided originals. • making an overlay copy of half of the image each from two originals. • copying from four one-sided originals on the front and the rear of paper (two images each from the four originals).
Shift	Shifts an image to any point on the copy.
Bind	• Creates a margin for binding on the left/right of the copy by shifting the image for a specified distance to the front or the rear of sub scanning direction. • The binding width may be adjusted between 1 and 20 mm in 1-mm increments.

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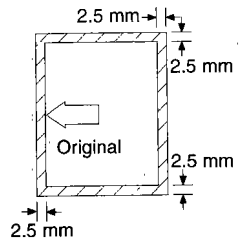
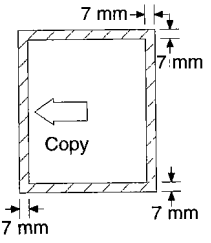
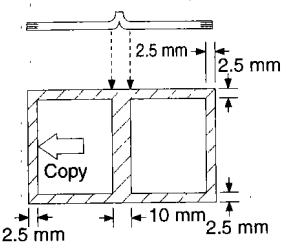
Key	Description
Extended Function	———
Frame Erase	Any of the following three modes may be used:
sheet frame erase	① Original Frame Erasing ② Sheet Frame Erasing
original frame erase	 
book frame erase	③ Book Frame Erasing 
Image Processing	———
Marker	Effective when the image processing board (option) is installed; processes areas specified by a highlight pen as follows:
frame	Frames the area specified by a highlight pen.
blank	Blanks the area specified by a highlight pen.
partial process	Processes areas specified by a highlight pen for any of the following: • shading • shadowing • negative/positive reversal • outline processing
Partial Process	Edits areas specified for various processing.
image create	
frame	• Copies only the specified area (framing). • Copies only the area outside the specified area (blanking). • For both framing and blanking, the following stands true: number of areas: 4 max. number of area points: 10 max.
blank	

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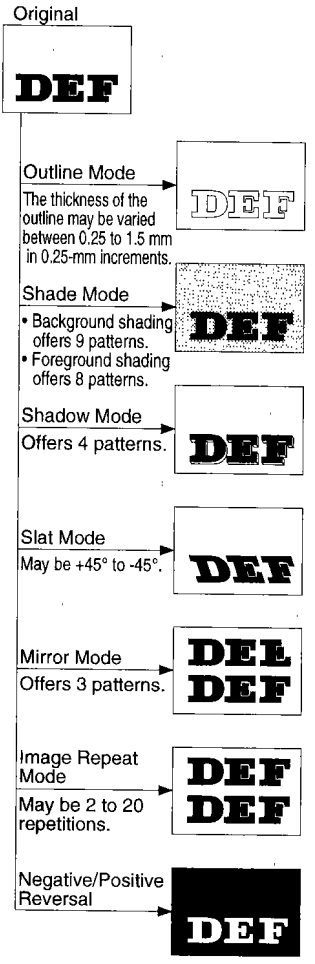
Key	Description
Image Processing	
outline shade shadow slant mirror image repeat	A press on 'image create' allows the selection of any of the following modes: outline* shade* shadow* slant mirror image repeat negative/positive reversal *Effective when the image processing board is installed. 
Sharpness	Enhances or softens images; may be set in 9 steps. (Lower the sharpness if moiré is conspicuous; however, such may make the text somewhat fuzzy.)

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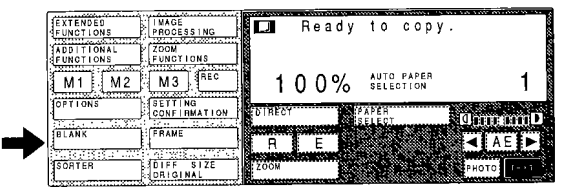
Key		Description
Extended Zoom		———
	XY independent zoom	Copies an image at different vertical/horizontal ratios.
	enlargement separation	Copies an original by dividing it into several units.
	zoom program	Automatically computes a reproduction ratio based on the size (length) of the original and the selected copy size (length).
User Mode		Stores copy modes, standard modes, or optional modes.
	mode memory store	Stores the current modes under M1, M2, or M3. The following modes, however, cannot be stored: • zoom fine-adjustment • density correction • feeder cleaning • machine specifications settings
	standard mode store	① Storing Standard Mode The current modes are stored as standard modes (used at time of power-on or resetting). ② Initializing the Standard Mode Initializes the standard mode to the factory mode.
	optional function 1 optional function 2	As many as two mode keys may be added to the extended control panel (standard screen); see the key indicated by an arrow.  The following modes may be represented by keys; others that fall under these modes cannot be given keys. two sided, separation, cover, transparency interleaf, image composition, overlay, binding, frame erasing, marking, partial processing, framing, blanking, image create, sharpness, XY independent zooming, enlargement separation, zoom program, full image

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Key	Description
Call	As many as three combinations of copy modes (copy count, density, ratio) that have been set previously may be recalled.
Option	Used when a projector/retention memory unit is installed.
projector	
option memory	
Settings Check	Displays the particulars of the current mode in response to a press on the Settings Check key; each settings screen may be opened by a key and settings may be modified.
Sorter	Selects sorter functions.
sort	
staple sort	
group	
none	
Mixed Original Sizes	Accommodates originals of different sizes (different feeding widths but same length).

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E. Common Settings

Press the key to select common settings.

1. Machine Specifications Settings

No.	Item	Descriptions	Remarks
1	Auto Cassette Change	When enabled, cassettes are switched over when the selected cassette runs out of paper during continuous copying if another cassette holds paper of the same size to continue the copying operation. OFF: disabled. ON: enabled.	At shipment, ON.
2	Single Original Sort	When enabled, a single original may be sorted or grouped when a DF is used. OFF: disabled. ON: enabled.	At shipment, OFF.
3	Manual Size Input	When enabled, the screen used to set the size of paper to be fed manually is brought up automatically when paper is placed in the multifeeder assembly. ON: enabled. OFF: disabled.	At time of shipment, OFF.
4	Initial Function	The copier will be set to any of its functions, i.e., copier, printer, or fax, at power-on, reset, or auto clear.	Select 'copy', 'printer', or 'fax'; then, press OK. At shipment, 'copy'.
5	Post Auto Clear Function	Sets whether the copier's function should return to the initial function after auto clear. return: returns to the mode set as initial mode. do not return: does not return to the function set before auto clear.	At shipment, 'return'.
6	Key Touch Sound	Sets whether to generate sound in response to a press on the keys on the touch panel display. ON: generate sound. OFF: do not generate sound.	At shipment, ON.

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No.	Item	Descriptions	Remarks
7	Error Alarm Sound	Sets whether to generate sound in response to an operation error. ON: generate sound. OFF: do not generate sound.	At shipment, ON.
8	1-Bin Sorter Paper Discharge	When OFF, pages will not be delivered if paper remains in any of the bins of the sorter* to prevent mixing of pages; a message is issued to this effect. *Stapler Sorter-B2 (10-bin sorter). ON: delivery may be made without removing the paper that remains. OFF: delivery cannot be made without removing the paper that remains.	At shipment, ON.
9	Outline of Marker Area	Sets how much of the area specified by the highlight pen should be processed. outer: The marker portion will be included for processing. inner: The marker portion will not be included for processing.	At shipment, 'outer'.
10	Marker Density Level	Adjusts the identification level of the marker.	In 9 steps; at shipment, 5.
11	Marker Pre-scan ON/OFF	Sets whether a marker pre-scan should be executed. ON: execute a marker pre-scan. OFF: do not execute a marker pre-scan.	At shipment, ON.
12	System Original Mixed Sizes	Sets whether originals of mixed sizes may be used on the DF when non-copy functions are used (such as faxing). ON: may be mixed. OFF: may not be mixed (not applicable to copying).	At shipment, ON.
13	Auto Vertical/ Horizontal Rotation	Sets whether the image should be rotated automatically for copying; effective when a retention memory unit is installed. ON: rotate and copy. OFF: do not rotate.	At shipment, ON.

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No.	Item	Descriptions	Remarks
14	Auto Retention	Sets whether images stored in memory should be copied starting with the second page in continuous copying; effective only when the retention memory unit is installed. ON: copy from memory. OFF: do no copy from memory; rather, execute a scan for each page.	At shipment, ON.

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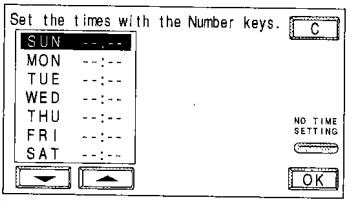
2. Timer Setting

No.	Item	Description	Remarks
1	Auto Clear Time	Sets the auto clear time between 1 and 9 min in 1-min increments; setting it to 0 min disables the function. The period of time for receiving faxes in sleep state and returning to sleep state depends on the auto clear time.	At shipment, 2 min.
2	Auto Power-Off Time	Sets the auto power-off time between 1 and 24 hr in 1-hr increments; the function may be disabled in service mode.	• At shipment, 2 hr. • May be changed in 10-min increments up to 1 hr.
3	Weekly Timer	Sets whether the copier should be turned off automatically on a day (Mon.—Sun.) basis; the function is disabled when set to 'none'. The current date and time must be set correctly to ensure the correct operation of the function.	
4	Time/Day Setting	Sets the time and the day of the week for the internal clock.	The control panel does not show the time or the day; however, the setting is used for the weekly timer.

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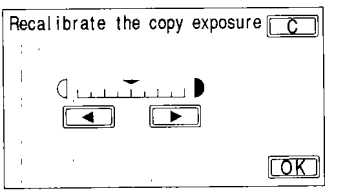
3. Adjustment/Cleaning

No.	Item	Description	Remarks
1	Zoom Fine Adjustment	Fine-adjusts the vertical and horizontal ratios in 0.2% increments. range: -1.0% to +1.0% unit: 0.1%	For instance, if the ratio 100% is set to +1%, the following will be true for 'adjustment +1%' (for both X and Y): 50%: 51% 100%: 101% 400%: 401%
2	Density Correction	Corrects the density if density adjustment fails to correct copies which are too dark or light.	
3	Wire Cleaning	Automatically cleans the primary and transfer corona wires.	
4	Feeder Cleaning	Place ten white sheets of paper on the feeder tray, and press OK. The sheets are fed in 'one-sided to one-sided' mode, and the separation belt and the feeding roller are cleaned.	

4. Setting the Special Tray

In this function, special tray A/B of the Multi Tray 7 is specified for output; however, this is only for non-copier functions, and copies will not be delivered to the special trays.

5. Storing the Specifications Settings Mode

The settings modified in specifications settings mode may be handled in either of the following ways:

store
The mode will remain after a press on the Reset key or turning off the power switch.

do not store
The mode will be cleared if the Reset key is pressed or the power switch is turned off.

To initialize the specifications settings mode to the factory mode, select 'initialize settings'.

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V. WARNINGS AND ACTIONS TO TAKE

A. Jam Message

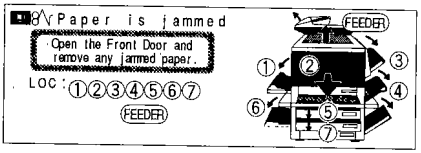

Figure 1-501

The message appears when there is a jam inside the copier. Remove the jam as follows:

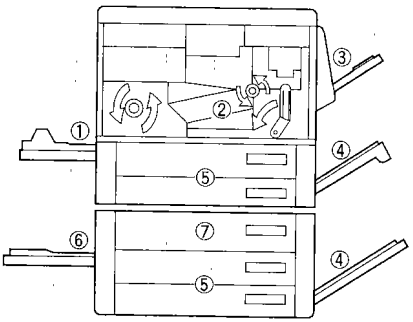

Figure 1-502

1. ① Is On

1) Open the front door.
2) Remove the copy paper from the copy tray.
3) Open the delivery assembly.
4) Open the guide plate (Figure 1-603), and remove the jam.

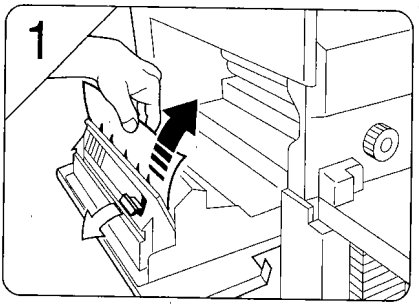

Figure 1-503

5) Turn the fixing assembly knob counter-clockwise, and remove the jam from the fixing assembly.

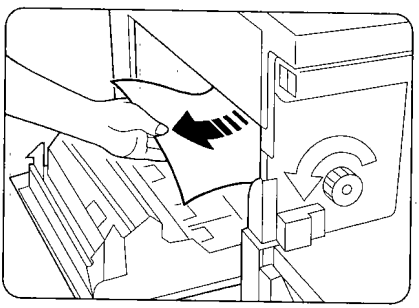

Figure 1-504

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2. ② Is On

1) Open the front door.
2) Shift the feeding assembly releasing lever counterclockwise.
3) Turn the registration counterclockwise to remove the jam.

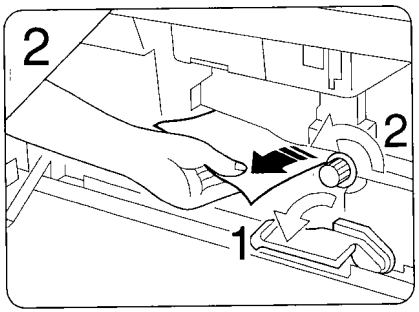

Figure 1-505

3. ③ Is On

1) Remove the paper from the multifeeder.
2) Remove the jam from the multifeeder assembly.

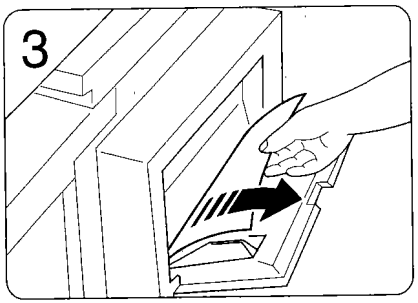

Figure 1-506

3) Open the right door.
4) While pulling the green grip below the multifeeder assembly toward the lower rear, remove the jam.

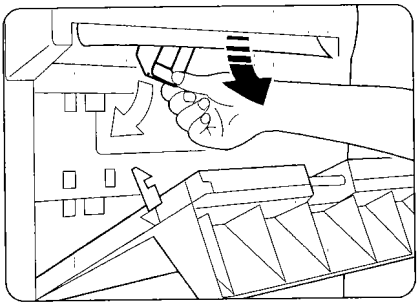

Figure 1-507

5) Close the right door.
6) Set paper on the multifeeder.
7) Open and close the front door to activate the jam reset function.

4. ④ Is On

1) Open the right door and the right door of the cassette feeding unit.
2) Remove the jam.

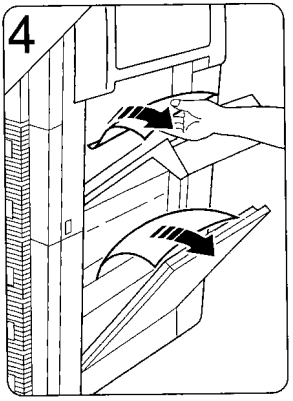

Figure 1-508

3) Close the right door.
4) Open and close the front door to activate the jam reset function.

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5. ⑤ Is On

1) Open the right door or the right door of the cassette feeding unit.
2) Slide out the cassette that was used.
3) Remove the jam.

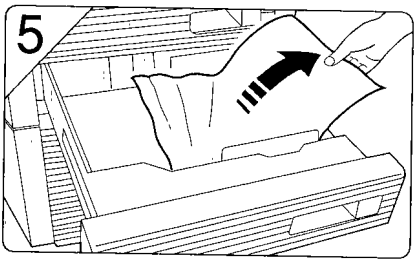

Figure 1-509

4) Slide in the cassette, and close the right door.
5) Open and close the front door to activate the jam reset function.

6. ⑥ Is On

1) Open the copier's left door.
2) Remove the jam.

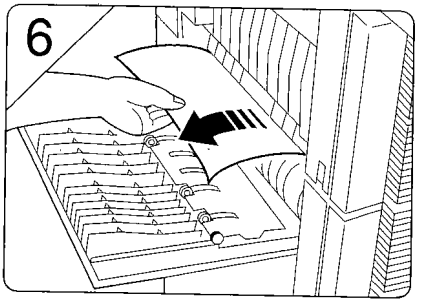

Figure 1-510

3) Close the left door.
4) Open and close the front door to activate the jam reset function.

7. ⑦ Is On

1) Open the right door of the cassette feeding unit.
2) Open the copier's left door.
3) Slide out the duplexing unit.
4) Remove the jam from the duplexing unit. Remove also the copy paper stored in the duplexing unit.

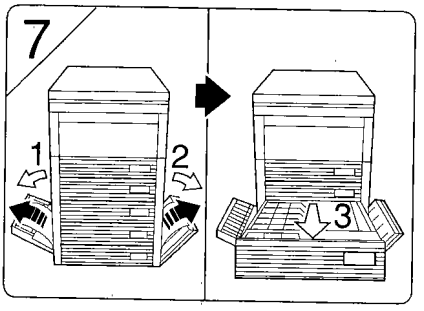

Figure 1-511

5) Close the duplexing unit, right door, and left door.
6) Open and close the front door to activate the jam reset function.

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B. Add Paper Indication

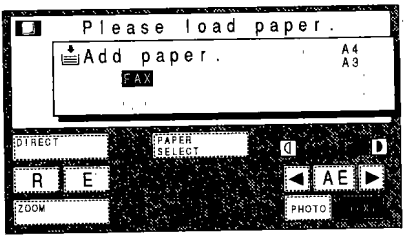

Figure 1-512

The message appears when the selected cassette runs out of paper. Supply paper as follows.

1. Supplying the Cassette with Paper

1) Hold the grip of the selected cassette, and slide out the cassette until it stops.
2) Open a package of copy paper, and take out the paper.
   Turn over the stack of sheets, and place it in the cassette.

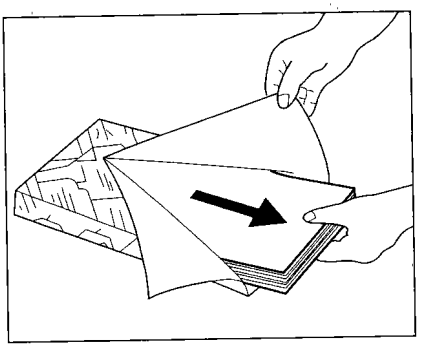

Figure 1-513

3) Place the stack of sheets on the holding plate of the cassette, and put the sheets in order.

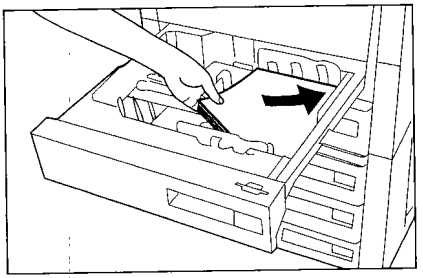

Figure 1-514

4) Set the cassette in the copier.

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C. Add Toner Indicator

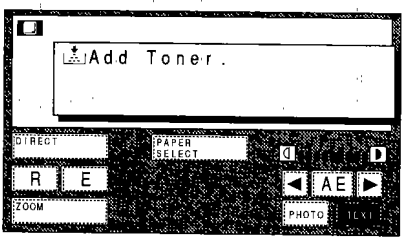

Figure 1-515

The message appears when toner runs out. Supply toner as follows:

1) Open the front door.
2) Turn the feeding assembly releasing lever counterclockwise.
3) Slide out the developing assembly.

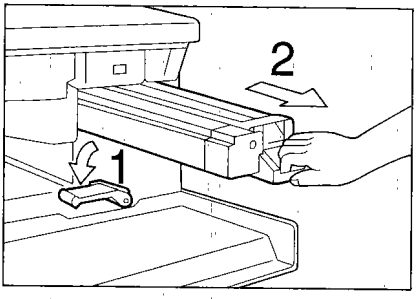

Figure 1-516

4) Shake the toner cartridge left and right several times to even out the toner inside.

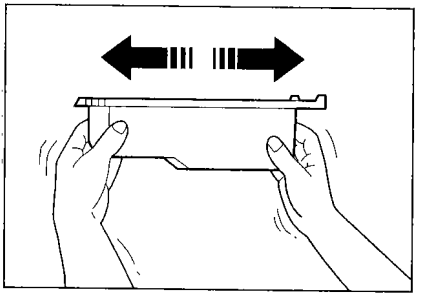

Figure 1-517

5) Fit the boss on the toner cartridge in the rear groove of the developing assembly, and engage the cartridge with the hopper until a click is heard.

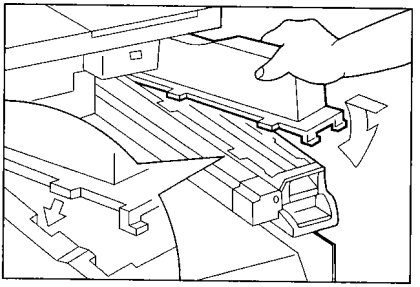

Figure 1-518

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6) While holding the toner cartridge in place, pull out the grip of the developing assembly until the seal stopper of the toner cartridge is in view.

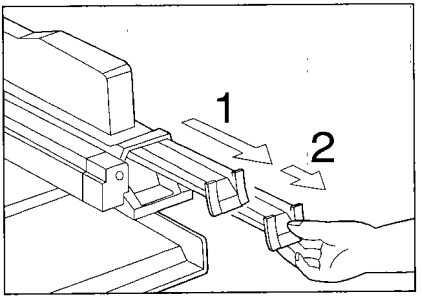

Figure 1-519

7) Hold the tab on the seal stopper, and pull it out until the STOP mark is in view.

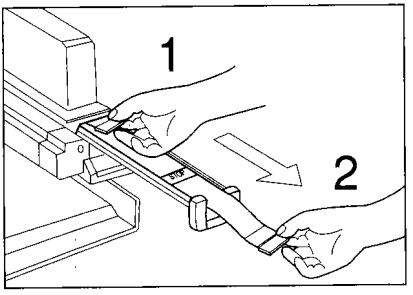

Figure 1-520

8) Tap lightly on the top of the toner cartridge to ensure all toner has fallen into the developing assembly.
9) Push in the grip of the developing assembly until a click is heard to make sure that the cartridge has been unlocked.

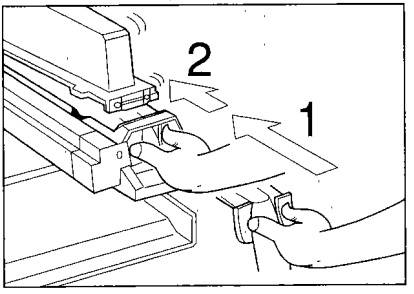

Figure 1-521

10) Tilt the front of the toner cartridge up, and detach the seal stopper from the developing assembly with care.
11) Set the developing assembly to the copier.
12) Turn the releasing lever of the developing assembly clockwise.
13) Close the front door.

Note:
For supplying black toner at time of installing the copier, see Chapter 5.

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VI. ROUTINE MAINTENANCE BY THE USER

Advise the user to go through the following at least once a week:

1) Wipe the copyboard glass with a moist cloth; then, dry wipe it.
2) Wipe the copyboard cover/DF feeding belt with a cloth moistened with mild detergent solution; then, dry wipe it.

Advise the user to clean the following if an image problem is noted, such as vertical white spots:

- corona wire (in user mode)
- separation static eliminator

Advise the user to replace the following if the above will not correct the problem:

- transfer corona wire
- separation static eliminator

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VII. SAFETY

A. ⚠Laser Beams

Since laser beams can be harmful to the human body, the copier's scanner system is enclosed within a protective housing and external covers, thereby preventing leakage of laser beams outside.

For this reason, there is no likelihood of the user's coming into contact with laser beams.

The copier is approved as a Class 1 laser product under IEC825 and, in the USA, as Class I under the Code of Federal Regulations (1040.10 of Title 21); see the label in Figures 1-801 and -802 (115/220/240V models only).

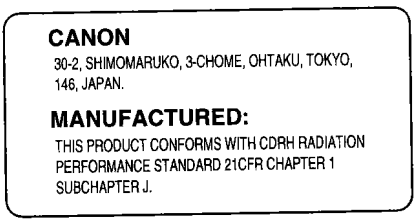
CANON
30-2, SHIMOMARUKO, 3-CHOME, OHTAKU, TOKYO, 146, JAPAN.
MANUFACTURED:
THIS PRODUCT CONFORMS WITH CDRH RADIATION PERFORMANCE STANDARD 21CFR CHAPTER 1 SUBCHAPTER J.

Figure 1-701 115V Model

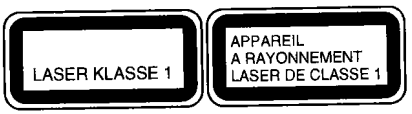

Figure 1-702 220/240V Model

WARNING:
Do not insert a screwdriver having a high reflectance or light-reflecting objects into the laser path when servicing around the machine's laser system. Be sure to remove watches, rings, or accessories before servicing the machine.

A laser beam is a visible light, and can cause permanent damage to the eye.

You will see a label (Figure 1-803) on some covers of the machine; take extra care when servicing mechanisms under such covers.

Figure 1-703

In the copier, the label is attached to the laser scanner system cover, which is used to prevent radiation of laser lights.

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B. Toner

What is referred to as toner is non-toxic material consisting of plastic, iron, and small amounts of dye.

To remove toner from the skin or clothes, wipe it with dry tissue paper, and then rinse the skin with water.

Do not use hot water, or the toner will turn into gel and permanently settle on clothes.

Keep toner away from vinyl products; it tends to disintegrate upon contact.

C. Ozone

The copier's corona assembly generates small amounts of ozone gas (O3) during corona discharge.

UL (Underwriters' Laboratory) imposes standards for ozone emissions, and the copier is tested to comply with the standards at time of shipment.

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I. IMAGE FORMATION

A. Outline

Figure 2-101 shows the construction of the indirect electrographic copier GP30F.

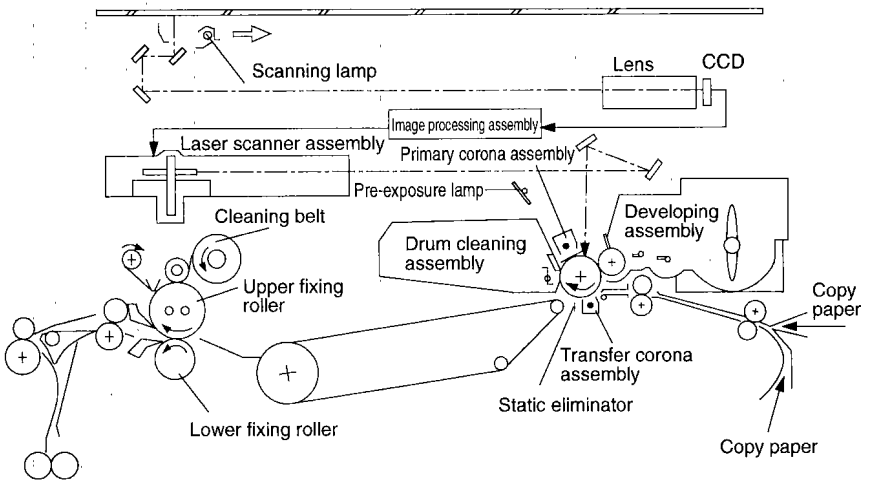

Figure 2-101

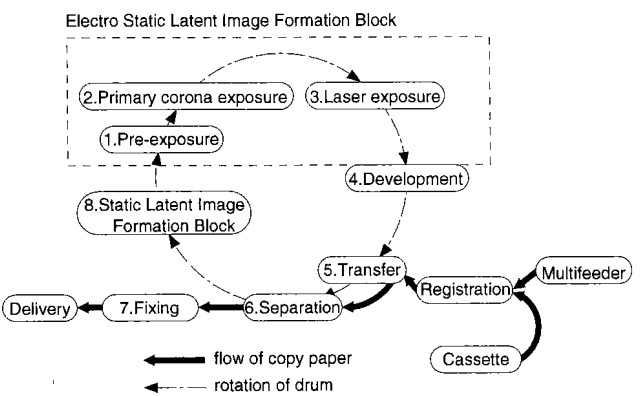

Figure 2-102

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The GP30F's image formation processes consist of the following steps:

step 1 pre-exposure
step 2 primary charging (negative DC)
step 3 laser exposure
step 4 development (AC and negative DC biases)
step 5 transfer (positive DC)
step 6 separation (negative DC)
step 7 fixing
step 8 drum cleaning

The photosensitive drum has a layer-construction: its outer layer is a photo-conducting layer made of organic photoconductor (OPC), and its inner layer is an aluminum substrate (conductor).

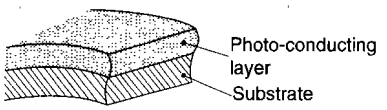

Figure 2-103

B. Static Latent Image Formation Block

The block consists of three steps; at the end of these three steps, negative charges corresponding to the white areas of the original are left behind on the photosensitive drum while removing negative charges corresponding to the black areas of the original.

The image formed by these negative charges are not visible to the naked eye and, therefore, is called a *static latent image.*

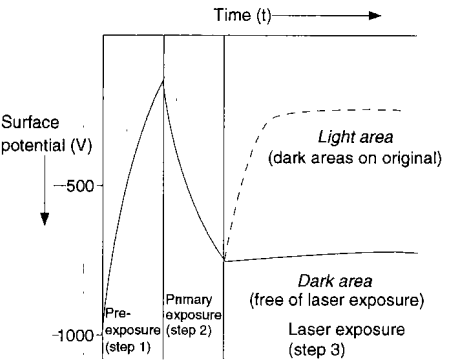

Figure 2-104

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C. Pre-Exposure (step 1)

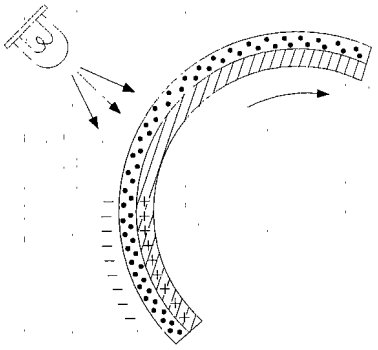

Figure 2-105

The surface of the photosensitive drum is exposed by the pre-exposure lamp before primary exposure, thereby removing the residual charges from the surface to prevent uneven copy density.

D. Primary Charging (step 2)

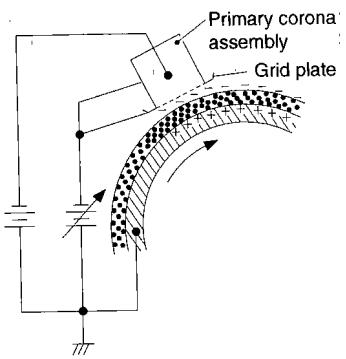

Figure 2-106

The surface of the drum is charged to a negative potential (primary charging) so that there is a uniform layer of negative charges.

A bias is applied to the grid to ensure a specific surface potential on the drum.

At the same time, an identical voltage is applied to the shielding plate to increase the discharging efficiency of the primary corona.

E. Laser Exposure (step 3)

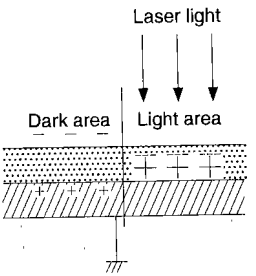

Figure 2-107

A beam of light is directed to the surface of the drum, corresponding to the dark areas of the original, thereby neutralizing the charges on the drum. The areas of the drum exposed this way are called light areas of the photosensitive drum—toner will be deposited in these areas during step 4 (development).

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F. Development (step 4)

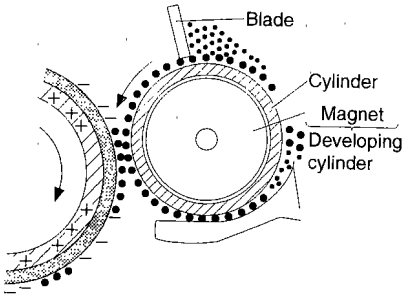

Figure 2-108

In this step, the latent image on the drum surface is turned into a visible image using toner.

As shown in Figure 2-108, the developing assembly consists of a developing cylinder and a magnetic blade; the developing cylinder in turn consists of a fixed magnet and a cylinder that rotates around it.

The toner used for the GP30F is composed of magnetite and resins. The toner has insulating characteristics and is charged to a negative potential by friction against the rotating cylinders.

In the case of the GP30F, toner is deposited in the areas of the drum where the charges have been neutralized by laser light (light areas); for this reason, the polarity of the toner is negative, which is the same as primary charging.

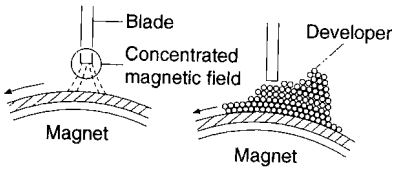

Figure 2-109

A concentrated magnetic field exists at all times from the magnet to the tip of the blade, attracting the magnetic toner.

The toner virtually remains intact because of the strong bond with the blade, depositing itself in a uniform layer on the developing cylinder.

An AC bias and a DC bias (negative component) are applied to the developing cylinder and the blade at the same time; the combination of these biases is what is referred to as the developing bias—its negative component is greater than its positive component.

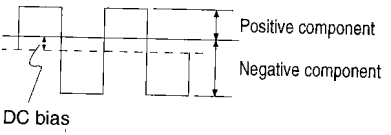

Figure 2-110

During copying operation, the toner is drawn to the light areas of the photosensitive drum because of the drum surface potential and the negative component of the developing bias, turning the static latent image into a visible image. Any excess toner is drawn back from the photosensitive drum by the drum surface potential and the positive component of the developing bias.

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G. Transfer (step 5)

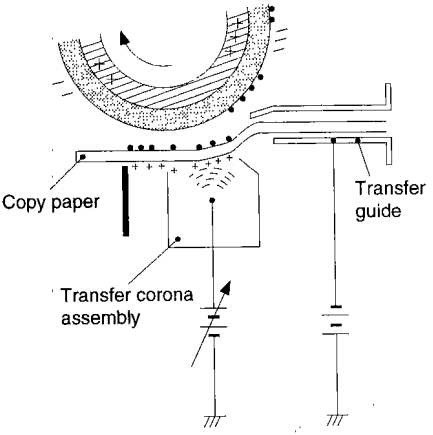

Figure 2-111

A positive charge (corona) is applied to the back of copy paper to attract toner from the drum surface to the copy paper.

To prevent soiling of the back of copy paper, a negative voltage is applied to the transfer guide so that stray toner will not collect on the transfer guide.

H. Separation (step 6)

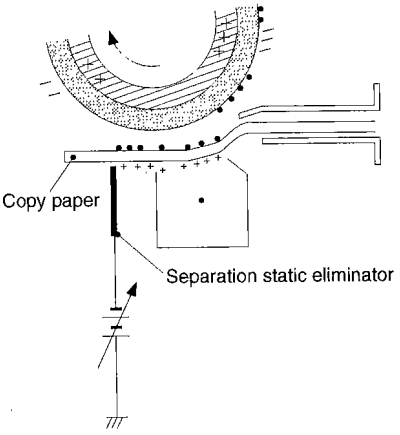

Figure 2-112

The rigidity of copy paper is used to separate copy paper from the drum. Thin paper, however, tends to wrap around the drum without separating from it because of its limited rigidity; to prevent such a problem, a negative voltage is applied to the separation static eliminator to weaken the static bond between the drum and copy paper, thereby facilitating separation.

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I. Fixing (step 8)

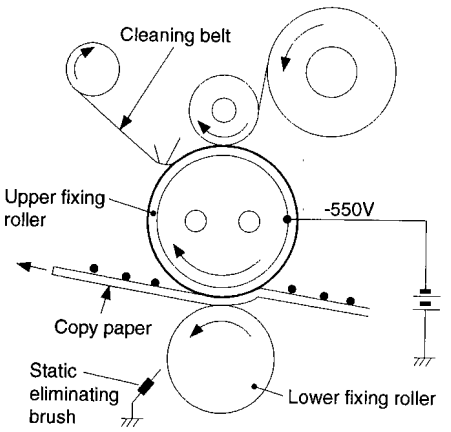

Figure 2-213

After transfer, the copy paper moves through two heat rollers so that the toner image is pressed into the fibers of the paper.

To prevent a jam or offset, the upper fixing roller is put into contact with a cleaning belt impregnated with silicone oil; the take-up mechanism moves the point of contact with the belt so that the upper roller is both cleaned and supplied with silicone oil at the same time.

To prevent toner offset, a negative DC bias is applied to the upper fixing roller, thus ensuring a specific voltage on the upper fixing roller. On the other hand, the lower fixing roller is provided with a static eliminating brush to prevent overcharging its surface; the brush is grounded and is kept at a distance from the roller.

J. Drum Cleaning (step 9)

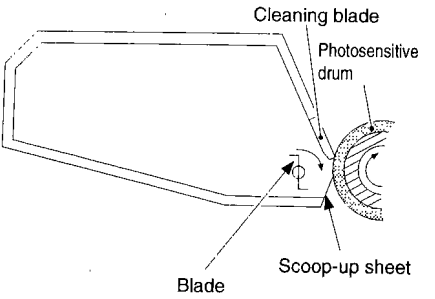

Figure 2-114

In preparation for the next copy, the cleaning blade cleans the surface of the photosensitive drum by scraping any residual toner. The toner is then gathered by the scoop-up sheet and collected by the blade to the rear.

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II. AUXILIARY PROCESSES

1. Ozone Filter

A catalytic filter is used as the ozone filter to dissolve ozone generated by the corona assemblies; the filter is found near the heat exhausting and the feeder assembly to prevent leakage of ozone to the outside of the machine.

2. Delivery Static Elimination

Immediately before delivery, copies still have residual charges brought about by transfer; a special grounded brush is provided near the delivery slot to remove such charges.

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I. BASIC OPERATION

A. Functional Construction

The GP30F may be divided into six functional blocks: pick-up/feeding system, original exposure system, image processing system, laser exposure system, image formation system, and control system.

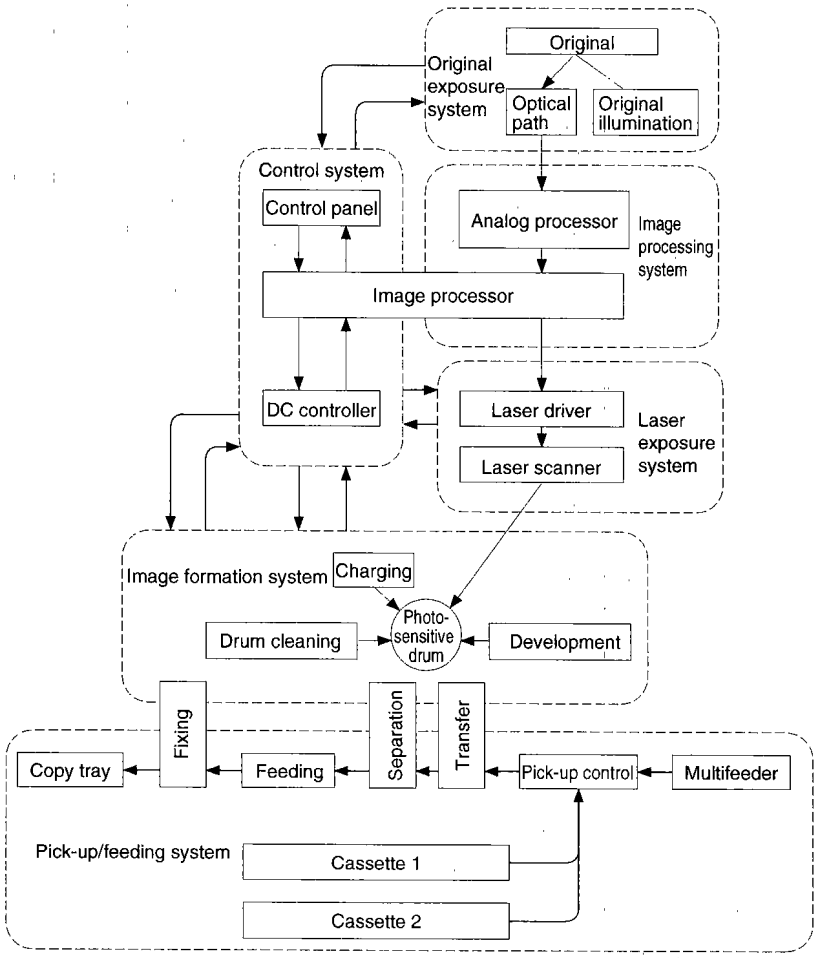

Figure 3-101

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B. Electrical Circuit

1. Control Sharing

The GP30F's electrical mechanisms are controlled by the CPUs shown in Figure 3-102 (block diagram).

See the tables that follow for an idea of how each CPU shares control work and the functions of the ROMs and RAMs on the PCBs.

a. Image Processor PCB

Name	IC	Description
CPU (slave)	IC857	• controls image processing • controls sequence • controls RF and editor • controls scanning system • detects errors and jams • service mode
ROM	IC848	program
RAM	IC873	stores parameters (service modes, etc.)
IPC	IC847	• communicates with RF and DC controller PCB
DPRAM	IC835	communication among CPUs
CPU	IC864	• controls control panel • controls communication with FAX PCB • controls job schedule • displays video images • communicates with MDC • communicates with PS-GP unit
FLASH ROM	IC862	program
FLASH ROM	IC863	display font
MASK ROM	IC861	*kanji* character font
RAM	IC829 IC830	stores telephone directory, one-touch dialing keys, etc.,with MDC connected, by FAX function.
LCD control	IC831	control LCD

Table 3-101

b. DC Controller PCB

Name	IC	Description
CPU	IC213	• controls pick-up/feeding • controls sorter • controls cassette feeding unit • controls fixing • controls high voltage • controls main motor and laser scanner • detects errors • detects cassette size
ROM	IC211	program
IPC	IC214	• communicates with image processor PCB and sorter and cassette feeding unit

Table 3-102

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2. CPU Block Diagram

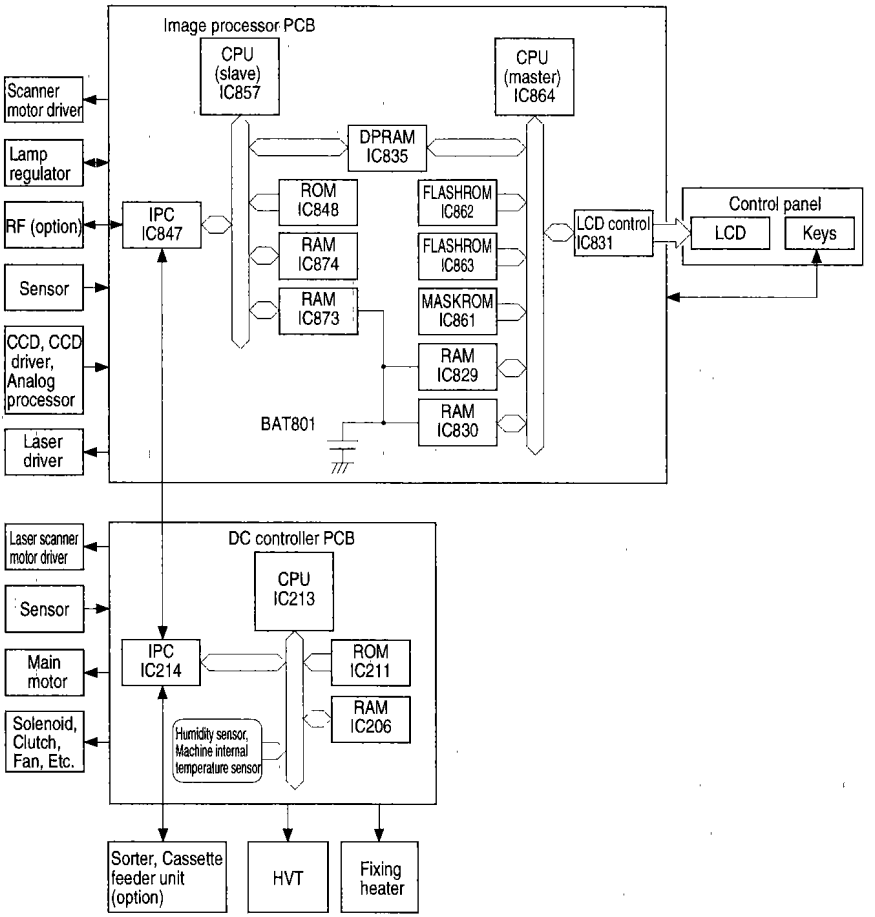

Figure 3-102

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3. General Block Diagram

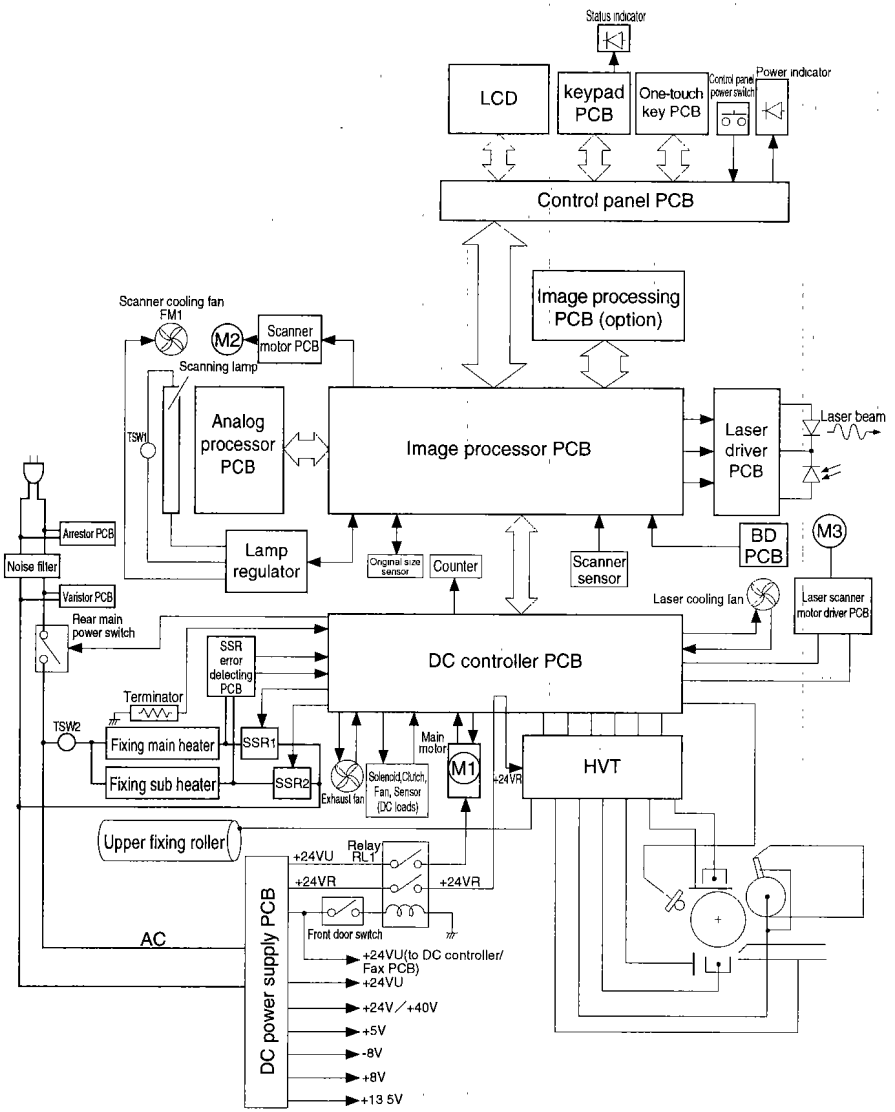

Figure 3-103

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C. Inputs to and Outputs from the Major PCBs

• Inputs to and Outputs from the Image Processor PCB (1/4)

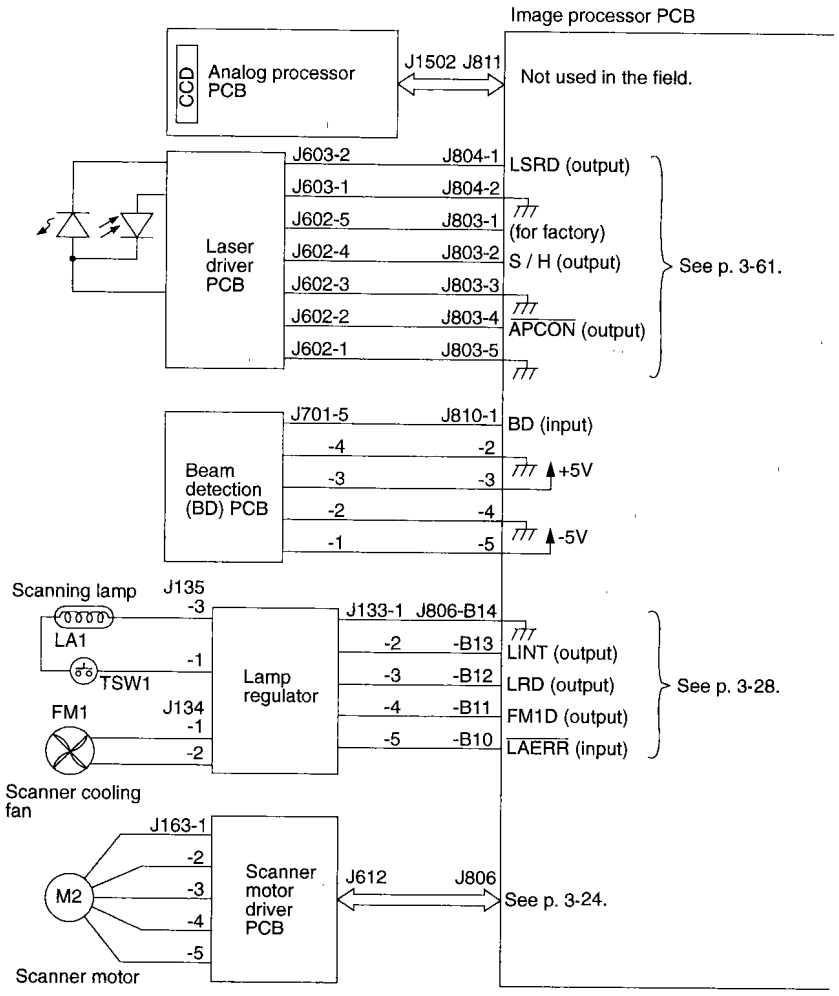

Figure 3-104

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- **Inputs to and Outputs from the Image Processor PCB (2/4)**

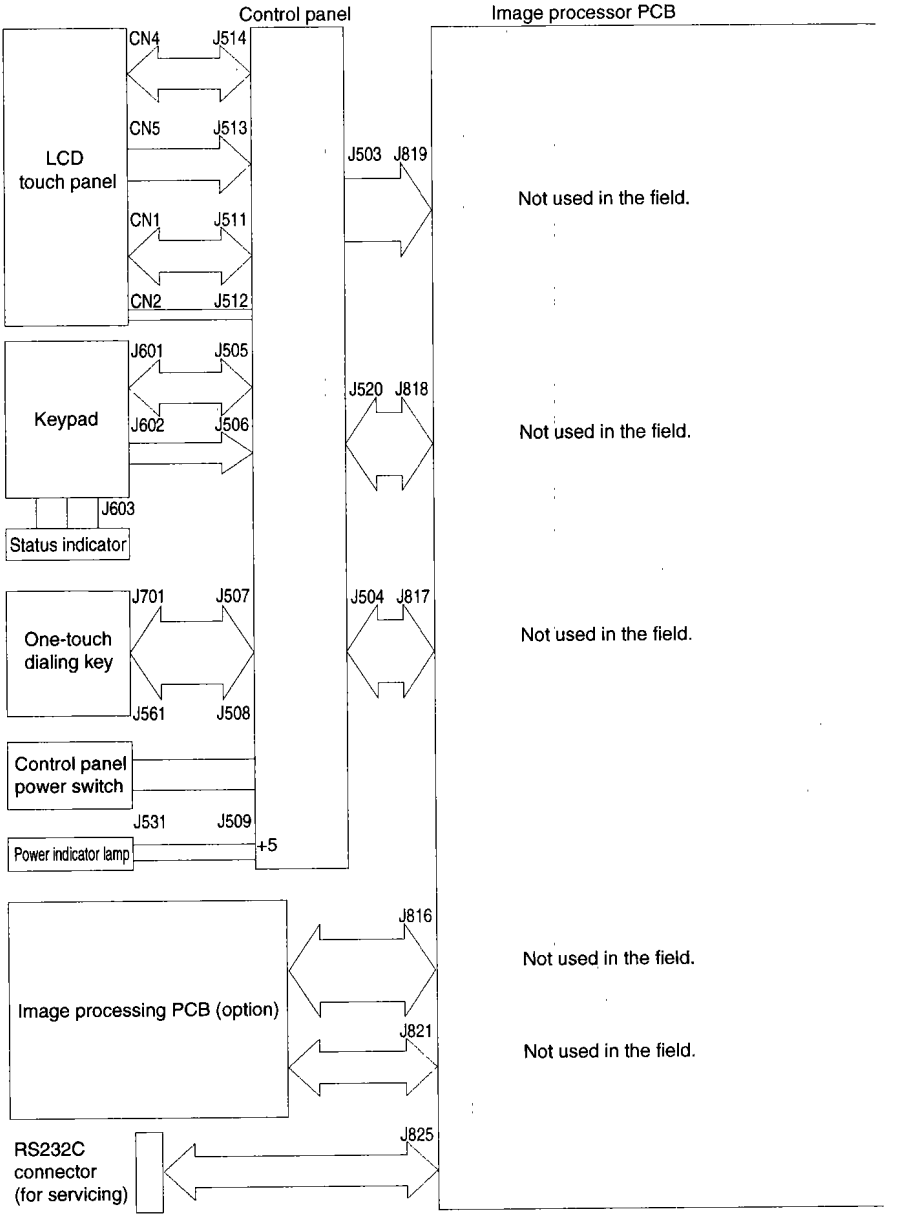

Figure 3-105

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• **Inputs to and Outputs from the Image Processor PCB (3/4)**

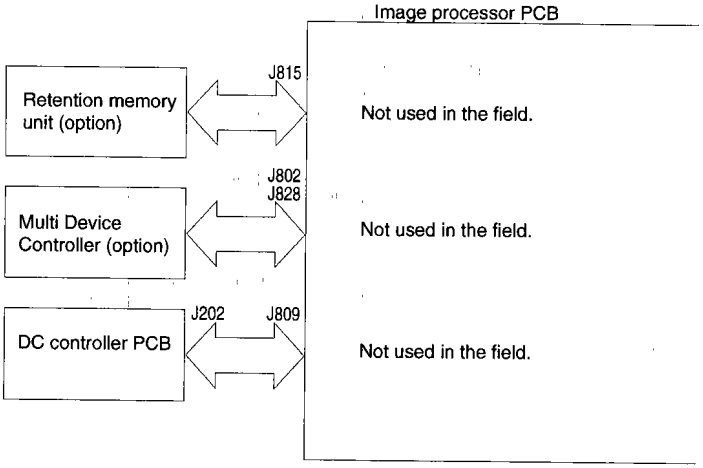

Figure 3-106

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- **Inputs to and outputs from the Image Processor PCB (4/4)**

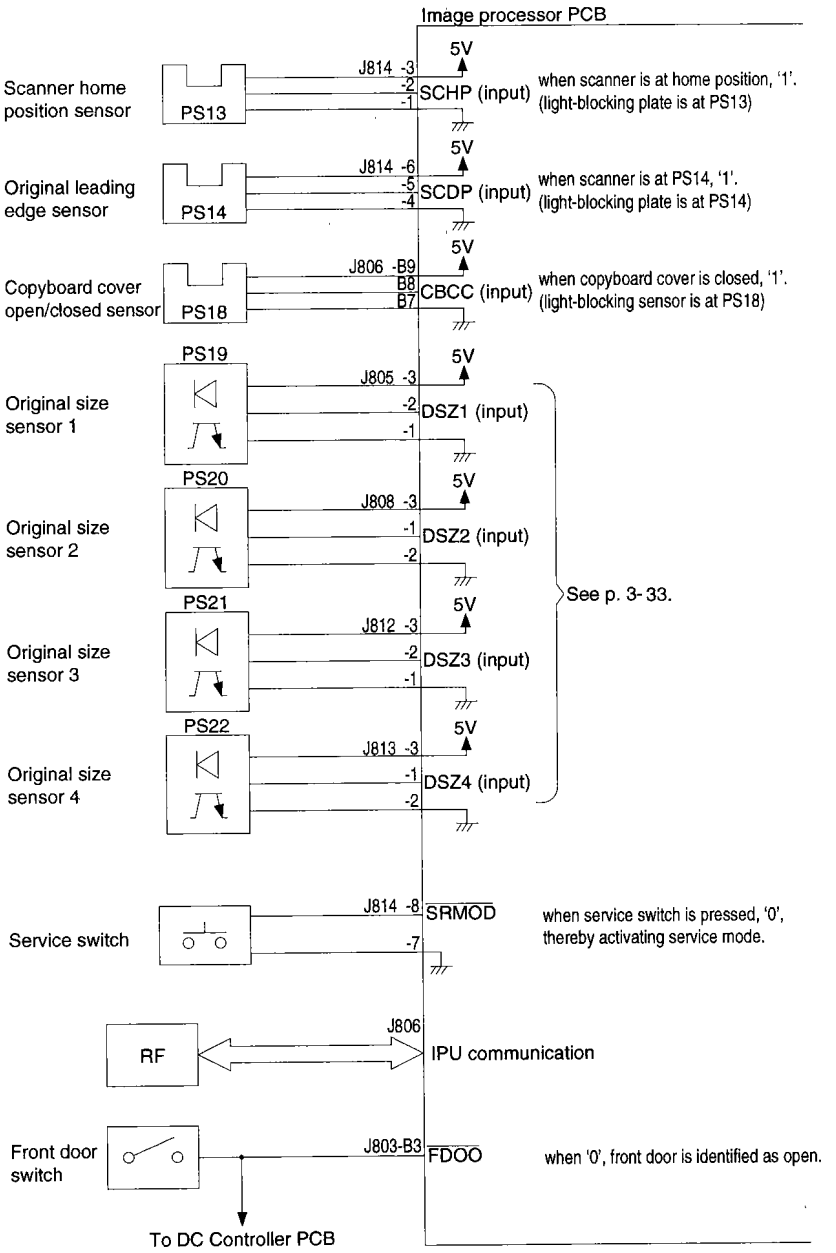

Figure 3-107

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• **Inputs to the DC Controller PCB (1/2)**

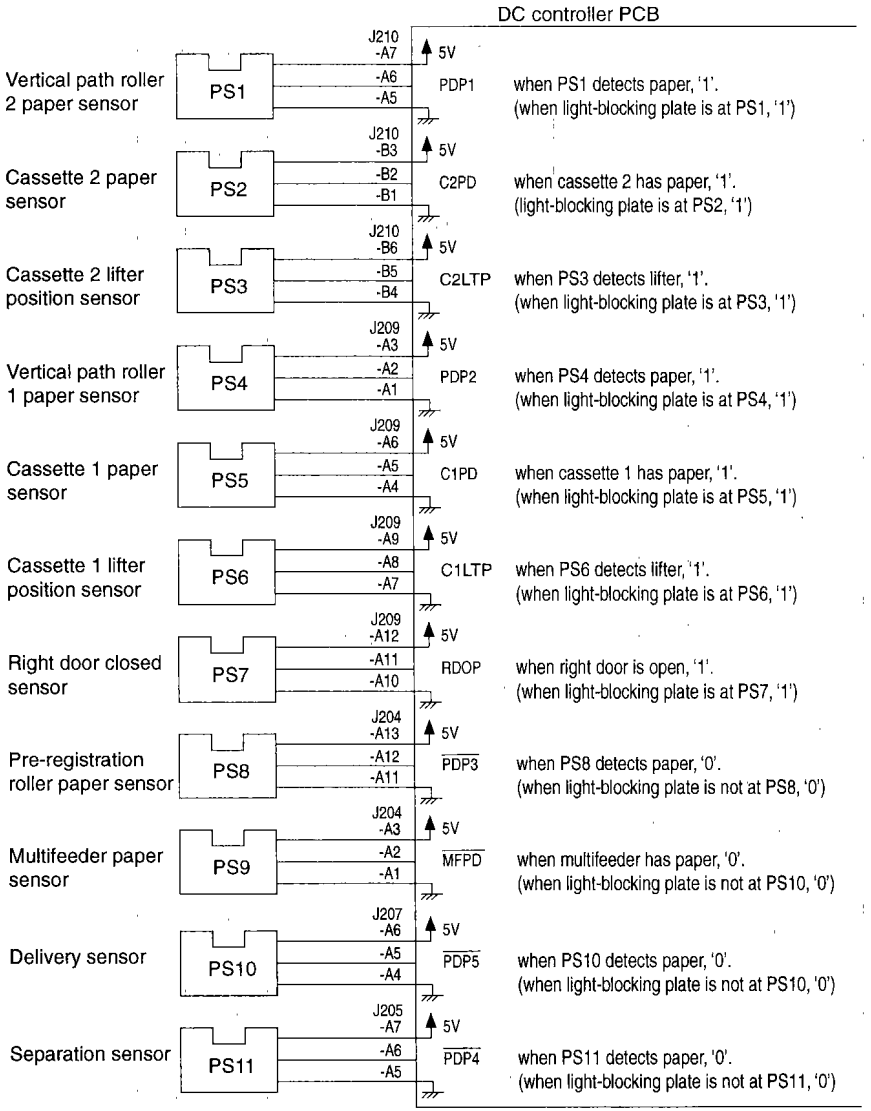

Figure 3-108

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• **Inputs to the DC Controller PCB (2/2)**

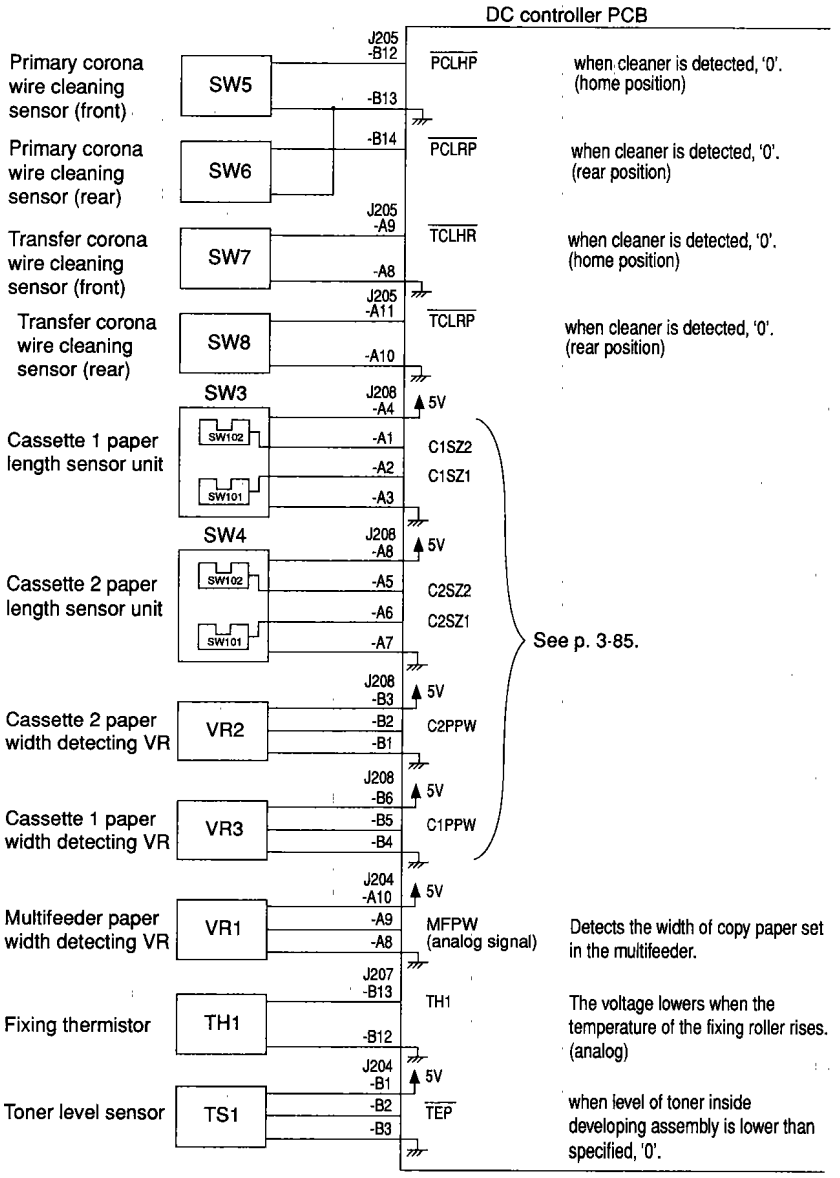

Figure 3-109

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• **Outputs from the DC Controller PCB (1/4)**

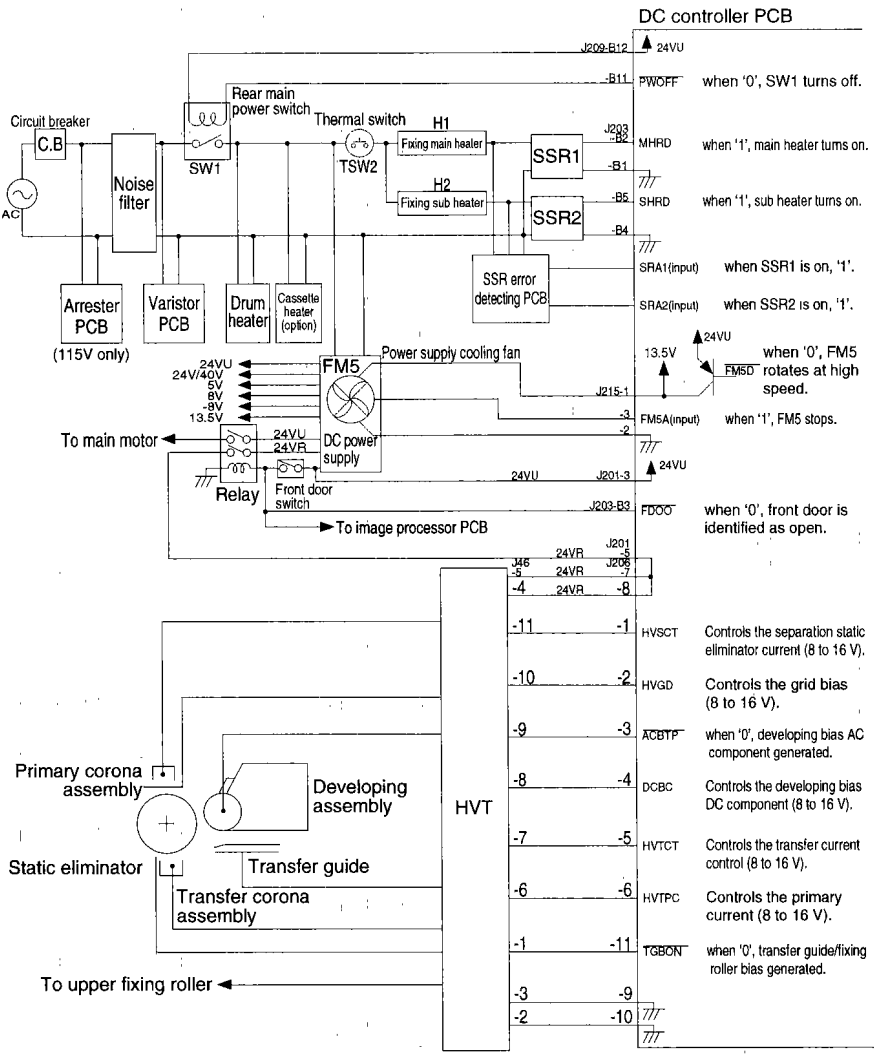

Figure 3-110

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• **Outputs from the DC Controller PCB (2/4)**

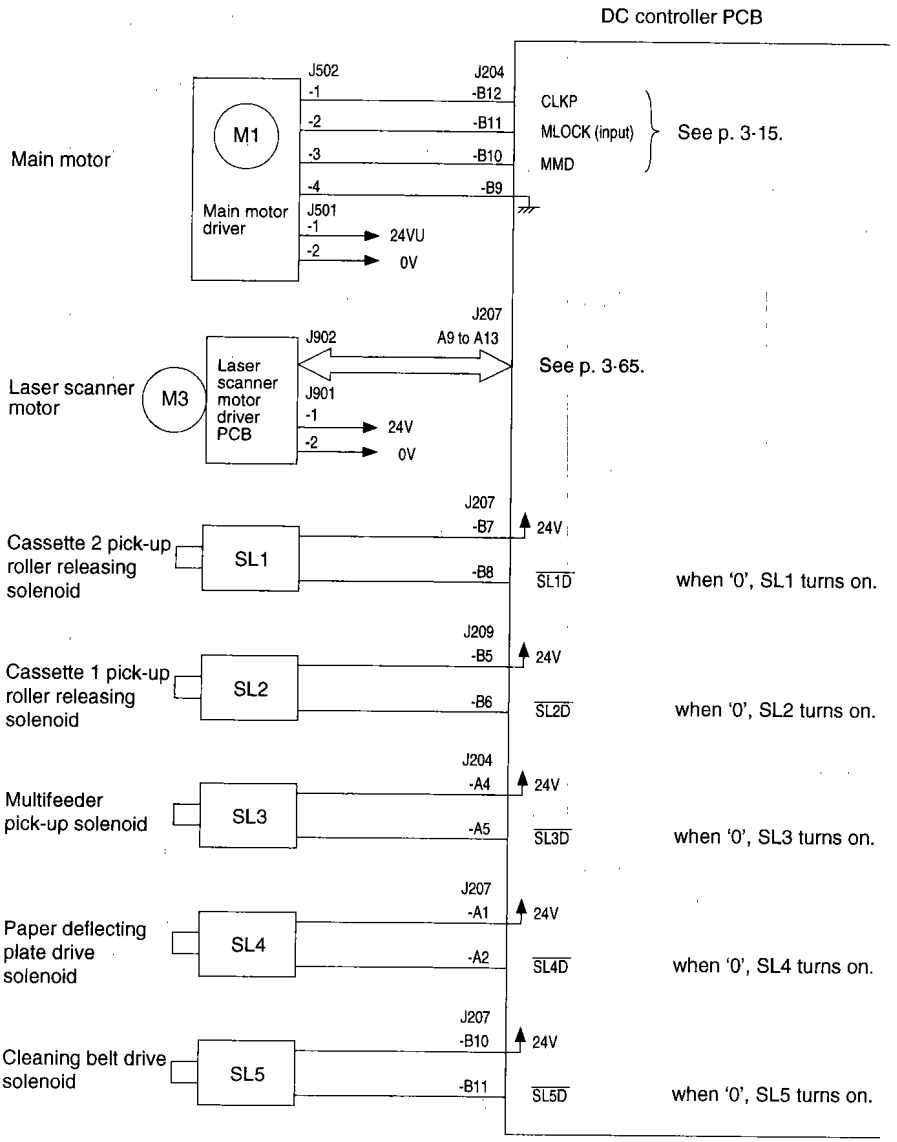

Figure 3-111

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• **Outputs from the DC Controller (3/4)**

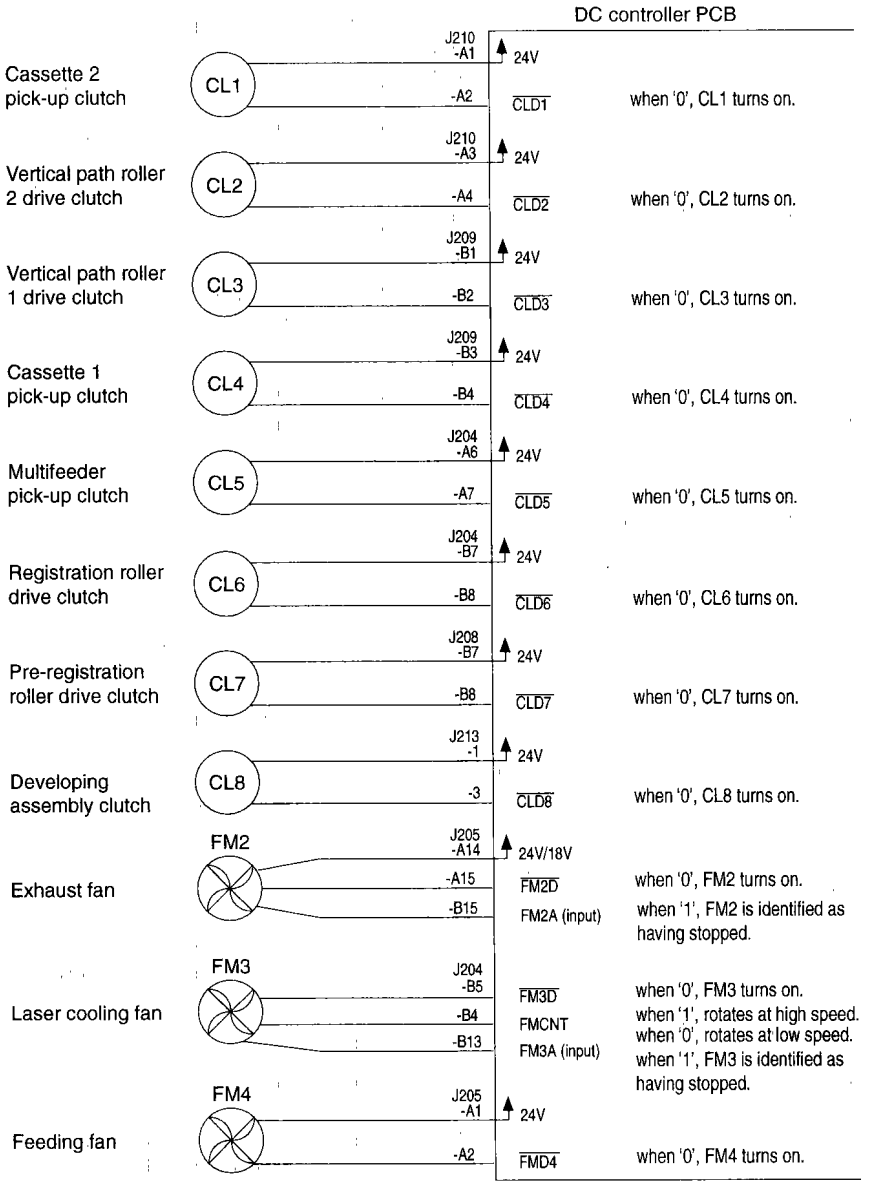

Figure 3-112

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• **Outputs form the DC Controller PCB (4/4)**

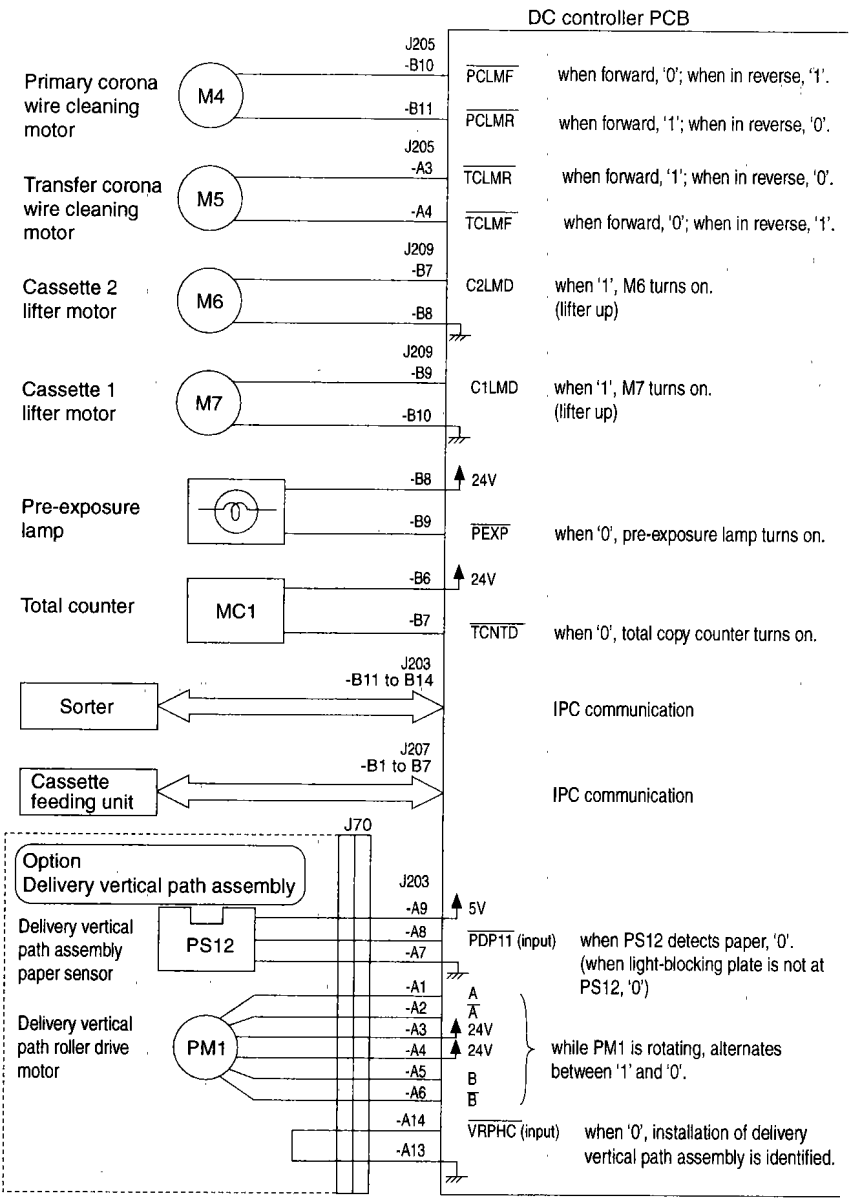

Figure 3-113

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D. Main Motor Control Circuit

1. Outline

Figure 3-114 shows the circuit that controls the main motor (M1), and the circuit has the following functions:

① turns on and off the main motor.
② controls the rotation of the main motor to a specific revolution.

The main motor (M1) is a DC motor equipped with a built-in clock pulse generator. When the motor rotates, clock pulses (MMCLK) that correspond to the revolution of the motor are generated. The speed control circuit serves to match these clock pulses and the phases of the frequency of the reference signals, thereby controlling the rotation of the motor to a specific revolution.

When the front door is opened, the relay (RL1) opens to cut out the +24Vu power used to drive the motor.

2. Operation

When the main motor drive signal (MMD) from the DC controller circuit goes '1', the drive circuit of the motor driver turns on, thereby rotating the main motor at a specific revolution.

The motor driver PCB sends the constant revolution state signal (MLOCK=1) to the DC controller PCB while the main motor is rotating at a specific revolution. If, for some reason, a fluctuation occurs in the rotation of the motor, the MLOCK signal goes '0'.

If MLOCK=0 continues for about 3 sec, an error is identified in the main motor, and the main motor is stopped while at the same time indicating 'E010'.

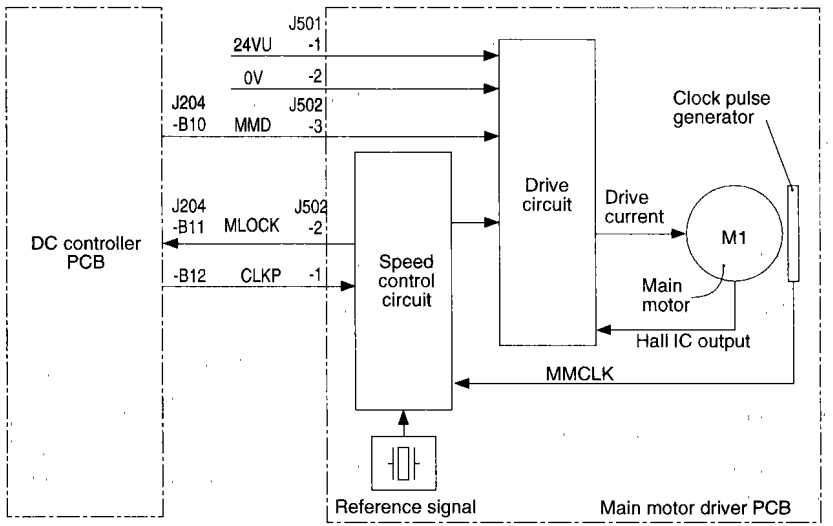
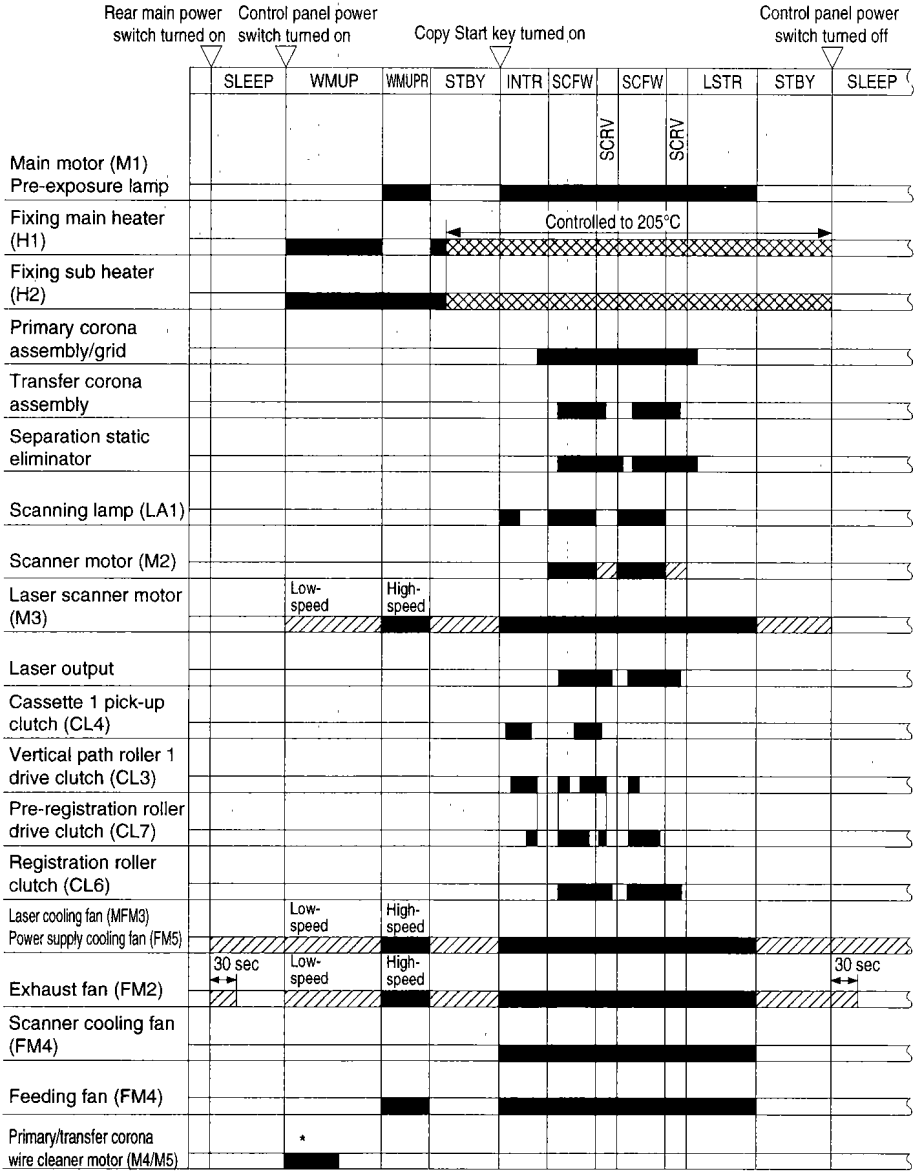


Figure 3-114

E. Basic Sequence of Operations 1 (A4, 2 copies, cassette 1)



*On when the temperature of the fixing roller is 100°C or less.

Figure 3-115

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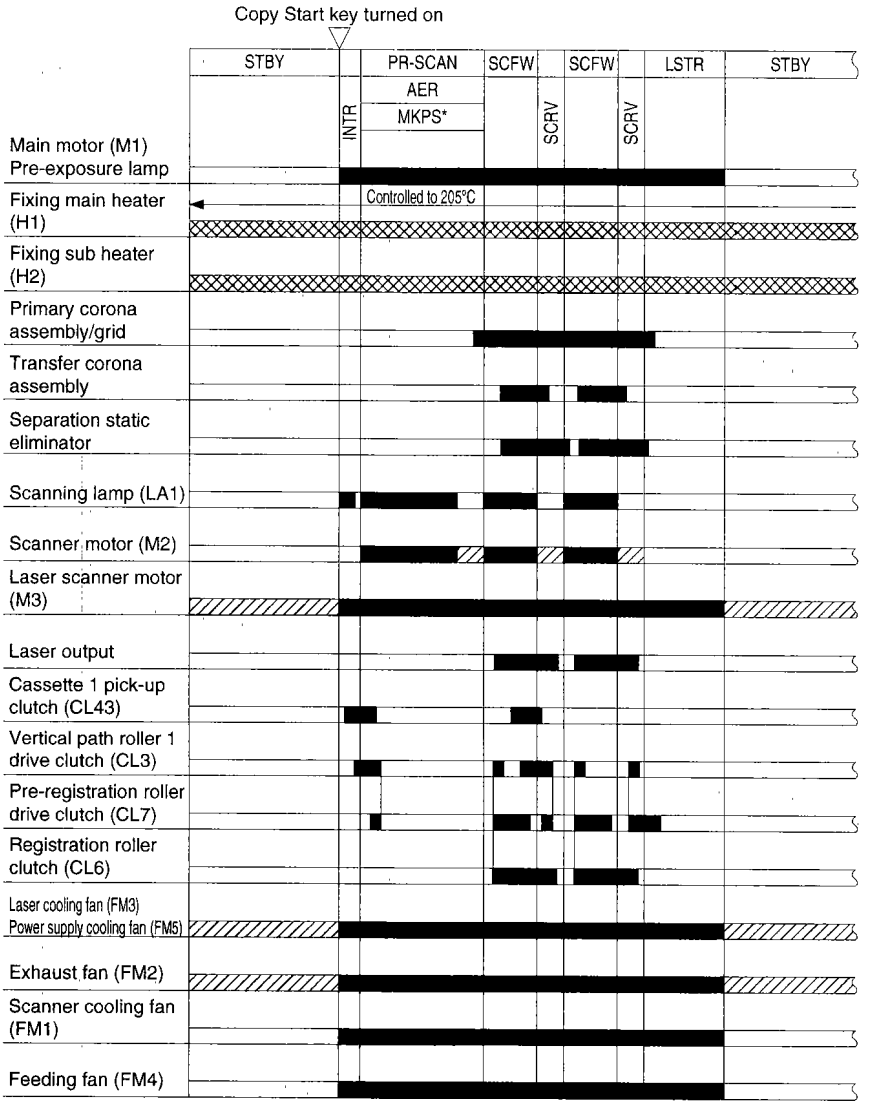
■ Basic Sequence of Operations 2 (A4, cassette 1, AE, marker*)

*May be used only when the image processing board (option) is installed.



*The marker pre-scan (MKPS) function may be enabled or disabled in user mode; AE may be disabled independently.

Figure 3-116

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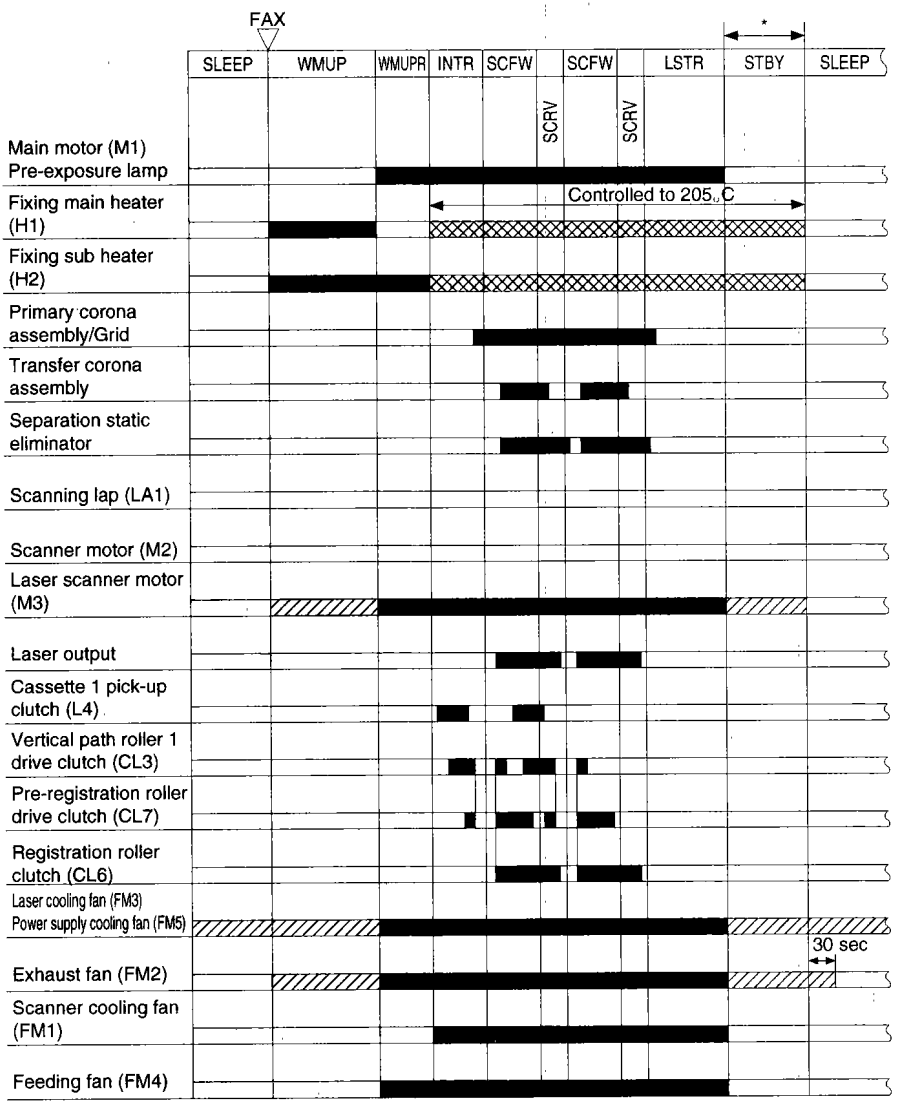
■ **Sequence of Basic Operations 3 (fax reception in sleep state)**
(valid with the MDC connected and with the FAX Board installed).



*Dependent on the time set for auto clear in common settings mode for the period of time between the end of generating received images and resumption of sleep state.

Figure 3-117

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Period		Description	Remarks
SLEEP (sleep)	When the control panel power switch is off and the rear main power switch is on.	Reduces loads on the machine when it is left unused for a long time (e.g., at night).	If a fax comes in during sleep state, the copier starts up automatically and generates a print-out.
WMUP (warm-up)	From when the control panel power switch is turned on until when the surface temperature of the upper fixing roller reaches a specific value.	Waits for the fixing roller to warm.	• The rated surface temperature of the upper fixing roller varies depending on how the surface temperature of the upper fixing roller rises. • The advance start function is available.
WMUPR (warm-up rotation)	From when the surface temperature of the upper fixing roller has reached the rated voltage until when the drum has rotated for a specific period of time and ended rotation.	Evens out the temperature of the fixing roller.	• The period of WMUPR rotation varies depending on how the surface temperature of the upper fixing roller rises. • If the advance start function has been activated, copying operation starts as soon as WMUP ends.
INTE (initial rotation)	From when the Copy Start key is pressed until when the scanner starts to move forward or pre-scanning (PR-SCAN) starts.	• Stabilizes the drum sensitivity in preparation for copying. • Executes shading correction.	

Table 3-104a

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Period			Description	Remarks
PR-SCAN (pre-scan)	AER (AE rotation)	The scanner is moved forward up to the leading edge of the original to execute AE measurement (in AE mode only).	The scanning lamp is used to illuminate the original, and the reflected light is received by the CCD, thereby identifying the density of the original to determine the copy density.	The scanner moves forward at a speed 50% of when it moves in DIRECT mode. (You may vary the distance traveled by the scanner under 'AE-SCAN' in service mode * 5 * .)
	MKPS (marker pre-scan)	The scanner is moved forward up to the trailing edge of the original, thereby identifying the marker level (in marker mode only).	The density of the original is checked to determine its level for marker identification.	• Marker mode is effective only when the image processing board (option) is installed. • You may enable or disable the execution of marker pre-scanning in user mode.
SCFW (scanner forward)		While the scanner is moving forward. • The distance traveled forward varies depending on the cassette size and the selected reproduction ratio. • The speed at which the scanner travels forward varies depending on the selected reproduction ratio.	The scanning lamp illuminates the original, and the reflected optical image is directed to the CCD through mirrors and lenses.	The scanner is moved forward with reference to the pre-registration roller paper detection signal.
SCRV (scanner reverse)		While the scanner is moving in reverse.	The scanner is returned to the home position in preparation for the next copy.	
LSTR (last rotation)		From when SCRV ends until the copy paper has moved past the delivery sensor.	Cleans the drum surface by means of static electricity as post-copying processing.	The last copy is discharged.
STBY (standby)		From when LSTR ends until the Copy Start key is pressed or any operation key is pressed.	Waits for a key operation (e.g., Copy Start key).	The indications on the control panel return to standard mode in 2 min after the end of LSTR. (The time may be changed in common settings mode.)

Table 3-104b

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II. ORIGINAL EXPOSURE SYSTEM

A. Outline

Figure 3-201 is a diagram that shows how the original exposure system exposes an original and its reflected light is led to the CCD.

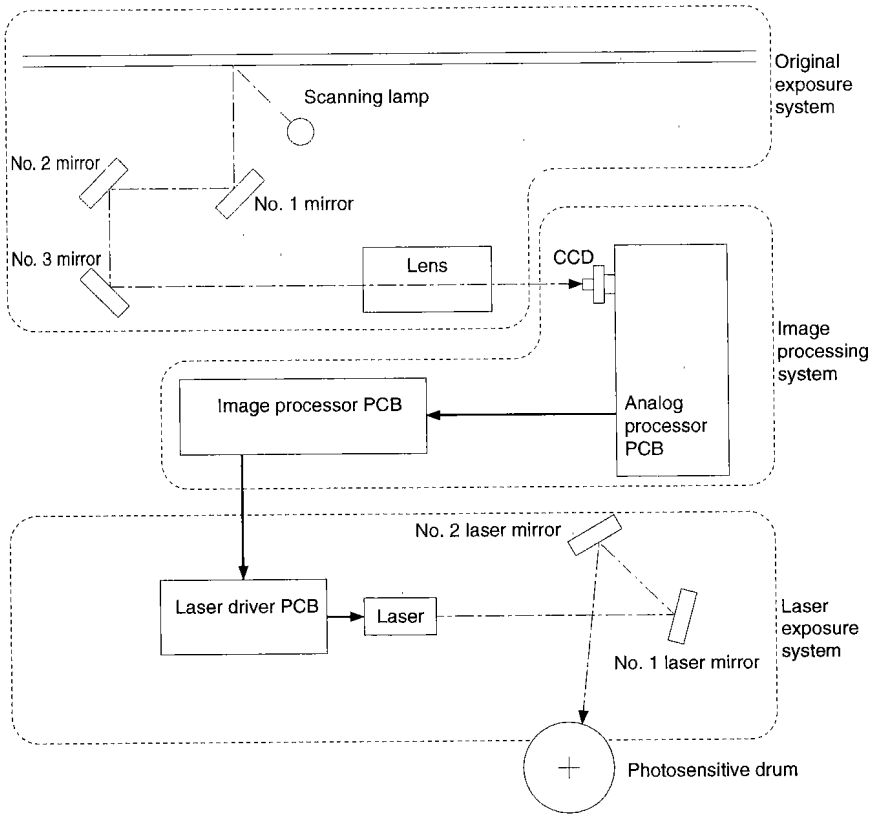

Figure 3-201

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B. Varying the Reproduction Ratio

The reproduction ratio in the main scanning direction (along drum axis) is varied by skipping data units (reduction) when writing the image signals into the line memory or doubling them (enlargement) when reading them from the line memory.

The reproduction ratio in the sub scanning direction is varied by moving the mirror mount at a higher speed (reduction) or at a lower speed (enlargement).

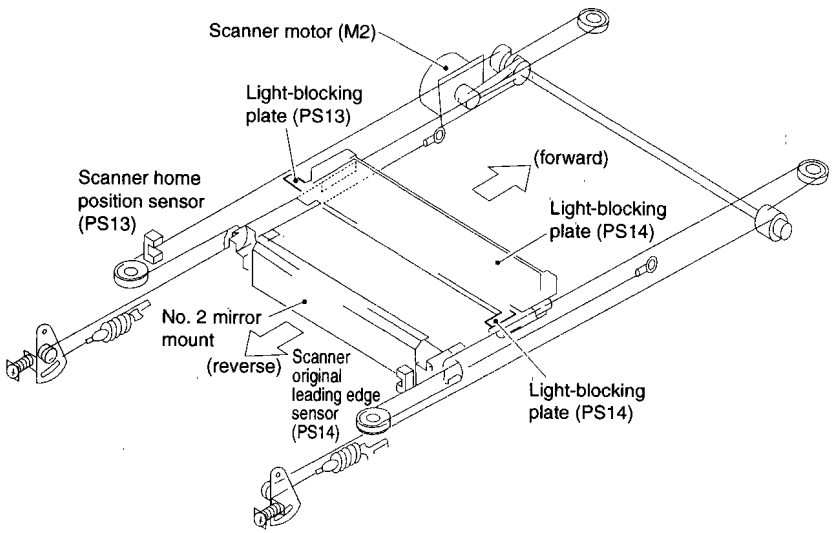

Figure 3-202

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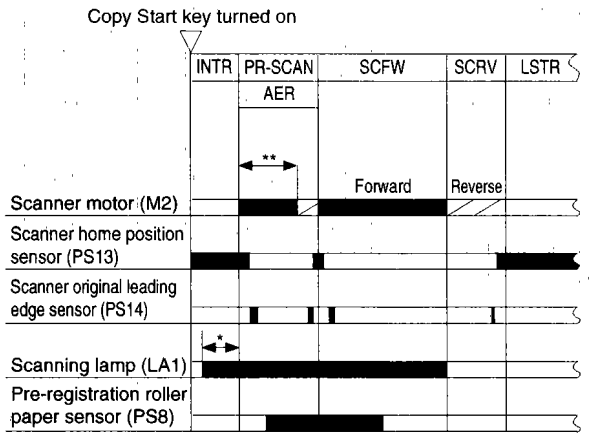
C. Basic Sequence of Operations (original exposure system)

1. Sequence (AE)



* Executes shading correction.
** Moves forward at the speed specified for a reproduction ratio of 50%.

Figure 3-203

2. Scanner Sensors and Signals

Scanner sensor	Signal	Scanner		Description
		Forward	Reverse	
PS13	SCHP			scanner home position
PS14	SCDP	↑		• registration clutch (CL6) on • scanner forward distance reference • image reading start
			↑	• scanner reverse off • scanner brake on

Table 3-201

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D. Scanner Motor

1. Outline

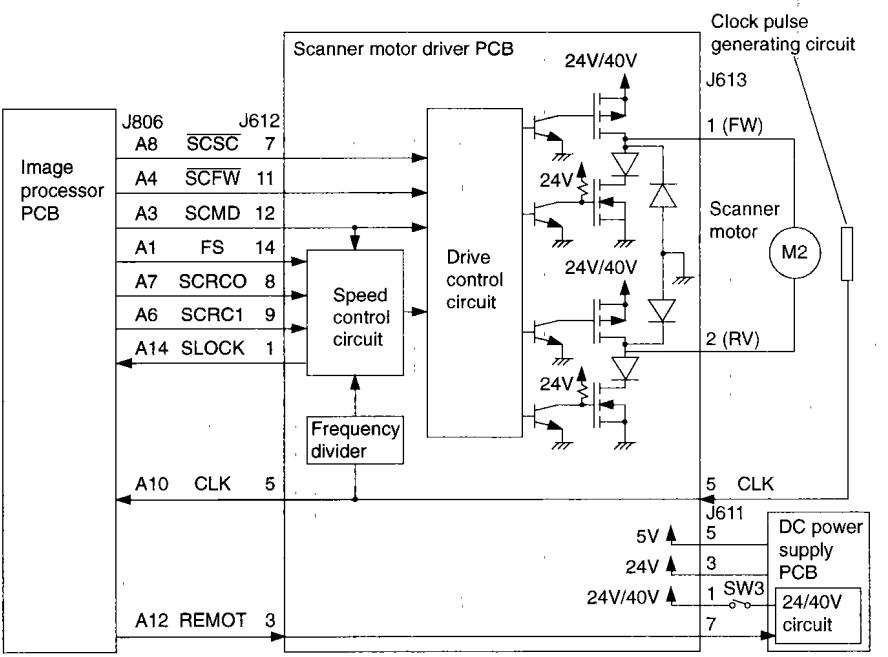
Figure 3-204 is a block diagram showing the circuit used to control the scanner motor; the circuit has the following functions:

- turns on and off the scanner motor.
- controls the direction of the rotation of the scanner motor.
- controls the speed of the rotation of the scanner motor.

The scanner motor rotates in opposite directions when the scanner is moving forward or in reverse; the speed of its rotation when the scanner is moving forward varies depending on the selected reproduction ratio.

The speed of its rotation when the scanner is moving in reverse remains constant regardless of the selected reproduction ratio; the speed is about seven times as high as the speed at which the scanner moves forward in DIRECT mode, moving the scanner in reverse at a very high speed.

The power used to drive the motor is cut out when the copyboard is removed by the work of the scanner motor safety switch (SW3).



SW3: scanner motor safety switch

Figure 3-204

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2. Operation

The scanner motor (M2) is a DC motor equipped with a clock pulse generator, and the direction of its rotation changes when the direction of the application current is changed.

The clock pulses occurring inside the motor are fed to the image processor PCB. Based on these clock pulses, the image processor PCB identifies the position of the scanner and generates control signals to the scanner driver PCB for reversing the scanner or braking it.

a. Moving the Scanner Forward/In Reverse

The scanner is turned on/off or its rotation is controlled based on the combination of the following two signals:

① motor drive signal (SCMD)
② scanner forward signal (SCFW)

Scanner	SCMD	$\overline{\text{SCFW}}$
Forward	1	0
Reverse	1	1
Brake	0	*
Stop	0	**

* '1' and '0' are reversed.
** '1' and '0' are retained.

Table 3-202

b. Varying the Speed

The scanner may be moved at any of four different speeds when exposing originals, and the appropriate speed is selected to suit the selected reproduction ratio as determined by the combination of the reproduction ratio select signal (SCRC0, SCRC1); see Table 3-203.

The speed control mechanism is executed when the scanner speed control on/off signal (SCSC) is '0'.

When the scanner is moving in reverse, the power supply switch signal (REMOT) generated by the image processor PCB is caused to go '1' to switch from 24 V to 40 V, thereby moving the scanner in reverse at a high speed.

SCRC0	SCRC1	SCSC	Ratio
0	0	0	401% to 180%
1	0	0	180% (less than) to 90%
0	1	0	90% (less than) to 45%
1	1	0	45% (less than) to 24.98%
1	1	1	scanner reverse

Table 3-203

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c. Maintaining Constant Speed

The clock pulses (CLK) generated by the scanner motor are frequency-divided and fed back to the speed control circuit.

The speed control, in turn, compares the reference pulse (FS) coming from the image processor PCB against CLK, and generates signals to the drive circuit so that the phases match—it generates the constant speed state signal SLOCK=1 if the phases match.

If the rotation of the scanner motor becomes unstable and SLOCK=0 remains for 0.2 sec, an error is identified in the scanner motor and the ongoing operation is stopped immediately while at the same time indicating 'E203' on the control panel.

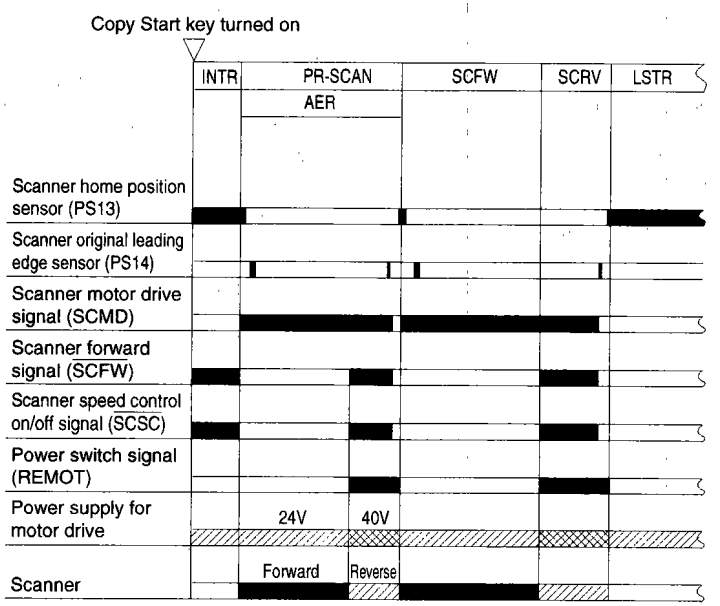

Figure 3-205

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E. Pre-Scan

1. Outline

In addition to moving the scanner forward (SCFW) to generate copies, the scanner is moved forward to read in image data. Such an operation is referred to as pre-scanning and is executed for the following modes:

1 AE mode
2 binding mode (right side)
3 shift mode
4 marker mode

2. Pre-Scanning in Each Mode

a. AE Mode

In AE mode, pre-scanning is executed to measure the density of the original, and the scanner is moved forward for the original size*. The speed at this time is 50% of the speed used while making copies.

*May be changed to half the length under 'AD-SCAN' in service mode (✱ 5 ✱).

b. Bind (right)/Shift Mode

In bind/shift mode, pre-scanning is executed so that the copier can identify the initial speed of the scanner.

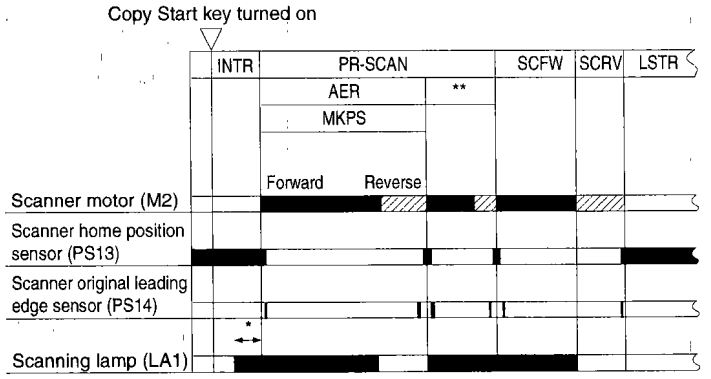
In other words, the initial speed of the scanner is measured for the purpose of placing the image at the specified position on the copy paper and thereby exposing the image with reference to the measured speed.

The speed corresponds to the speed used for the selected reproduction ratio, and the scanner moves over a distance approximately half the length of the original.

c. Marker Mode

In marker mode, the identification level is determined for marker identification.

Such pre-scanning operation may be enabled or disabled in user mode; further, it is executed simultaneously with pre-scanning for AE, i.e., the marker levels identified while executing AE measurement.



* Executes shading.
** Pre-scanning in bind/shift mode.

Figure 3-206

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F. Controlling the Intensity of the Scanning Lamp

1. Outline

Figure 3-207 shows the circuit used to control the intensity of the scanning lamp, and the circuit has the following functions:

1 turns on and off the scanning lamp.
2 detects the activation of the scanning lamp.
3 controls the intensity of the scanning lamp.

The circuit serves to keep the intensity constant against fluctuations in the power supply voltage.

2. Operation

a. Turning On and Off the Scanning Lamp

The scanning lamp (LA1) is turned on or off by the LRD (lamp regulator drive) signal.

When LRD=1, the lamp regulator drive operates, thereby causing the switching circuit to go on and off repeatedly to supply a specific DR voltage to the scanning lamp.

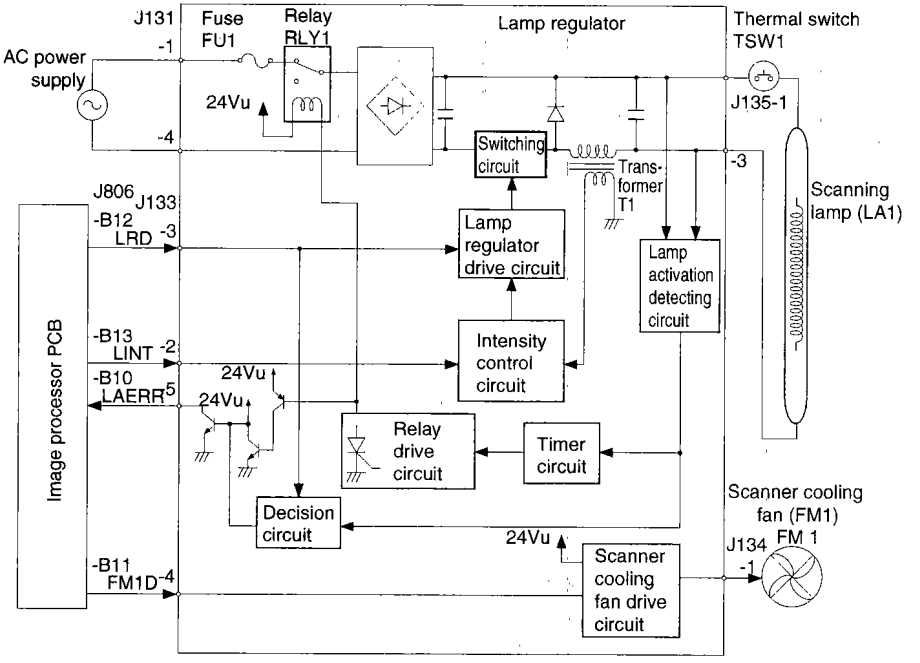

Figure 3-207

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b. Controlling the Intensity of the Scanning Lamp

The intensity of the scanning lamp is determined by the LINT (intensity adjust) signal generated by the image processor PCB.

Figure 3-207 shows the intensity control circuit that controls the lamp regulator according to the voltage level of the LINT signal.

The lamp regulator drive circuit varies the on/off ratio of the switching circuit, thereby controlling the voltage to a specific level.

The scanning lamp activation voltage is fed back to the intensity control circuit to identify the fluctuations in the activation voltage.

If a fluctuation in the activation voltage occurs, the intensity control circuit corrects the on/off ratio of the switching circuit to maintain the intensity to a specific level.

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c. Detecting the Activation of the Scanning Lamp

The lamp activation detecting circuit inside the lamp regulator remains in operation as long as the scanning lamp is on.

It also serves to communicate the state (activation) of the scanning lamp to the timer circuit and the decision circuit.

① Detecting Excess Activation

If the scanning lamp remains on for about 60 sec, the timer circuit activates the relay drive circuit to turn on the relay (RL1). The condition cuts off the AC input to turn off the scanning lamp and, at the same time, sends the lamp error signal (LAERR) to the image processor PCB, leading to the indication of 'E220' on the control panel.

When the relay turns on, remove the cause, turn off the rear main power switch, and leave the machine alone for about 1 min to reset.

② Wrong Activation

If, for some reason, the scanning lamp turns on even though the lamp regulator drive signal (LRD) is '0', the decision circuit turns on.

As a result, the lamp error signal (LAERR) goes '1', indicating 'E220' on the control panel.

See Table 3-204 for LRD, scanning lamp on, and LAERR signals.

Table 3-204

LED	Scanning lamp	LAERR signal
0	off	0
0	on	1 (error)
1	off	0
1	on	0

d. Protective Mechanism

The copier is equipped with two types of protective mechanisms to prevent malfunction of the scanning lamp.

- If the internal temperature of the thermal switch exceeds 140°C, the thermal switch turns itself off, thereby cutting the power supply to the scanning lamp.
- If an overcurrent flows because of a short circuit round the scanning lamp, the fuse blows, thereby cutting off the power supply to the lamp regulator.

Caution:

The thermal switch (TSW1) is used for the DC line, and its contact may become damaged when it operates. Do not use it again by resetting, since the operation may not be stable.

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G. Controlling the Original Size Identification

1. Outline

The GP30F has auto paper select and auto ratio select mechanisms, and the use of these functions calls for the identification of the size of the original.

Original detection circuits are located under the copyboard glass at points shown in Figure 3-208 and Table 3-205; the arrangement differs from model to model (Table 3-205); when the copyboard cover is closed, the presence of an original is checked and its size, if any, is identified as being of a default size.

The original detecting circuit uses a LED to emit light, and the light reflected by the original is detected by a phototransistor, whose output is sent to the image processor PCB.

The size of originals picked up from the DF (option) is identified by the DF itself, and the data is sent to the copier for decisions on auto paper select and auto ratio select.

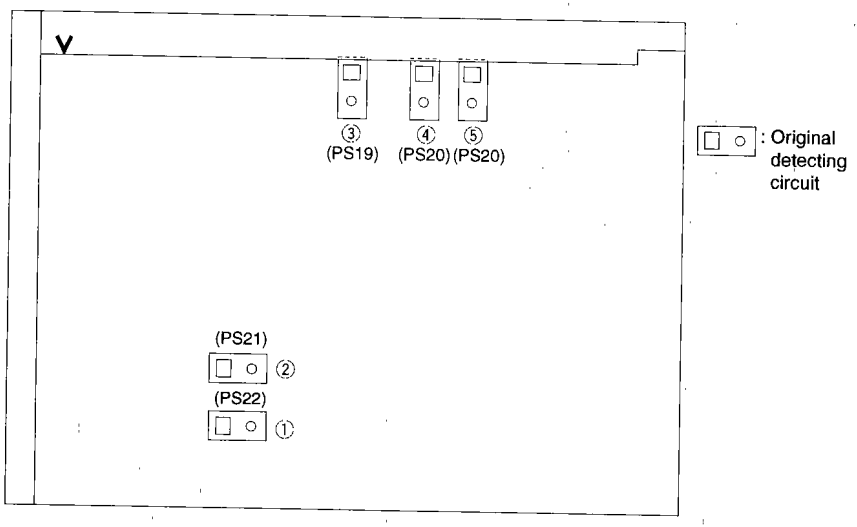

Figure 3-208

	①	②	③	④	⑤
AB	○	○	○	○	×
INCH	×	○	○	×	○
A	○	×	○	×	×

○···installed.

×···not installed.

Table 3-205

If you must change the arrangement of the original detecting circuits in the field, follow Table 3-205.

In addition, be sure to store the new settings under 'SIZE-DET' in service mode ✱5✱ after changing the arrangement.

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2. Operation

When the copyboard cover is brought down to about 30°, the photointerrupter (PS18) located at the copier's rear turns on, i.e., the light-blocking plate moves to PS18. The output level of each sensor is read for 15 sec or at intervals of 0.128 sec for 15 sec until the Copy Start key is pressed. If there is no change in the level of the output, the copier assumes the presence of an original at the sensor location; thereafter, the size of the original is determined according to Tables 3-205 through -208.

This way of identification enables identification of the size of even a black original.

The level of the sensor output, however, will not change for conditions a or b below; in the case of condition c, the A3 cassette will be selected with priority—if such a cassette is not set, a cassette suited to standard mode will be selected.

a. The original is an A3 black original.
b. The original is a book, i.e., the thickness of a book prevents changes in the level of the sensor output.
c. The copyboard cover is not closed, i.e., PS18 remains off.

Reference:

If condition a, b, or c exists, the copier can wrongly identify the size of the original.

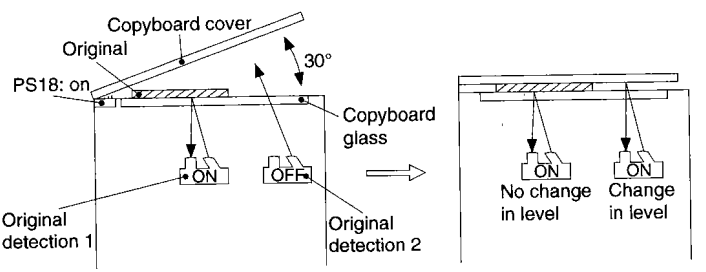

Figure 3-209

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3. Identifying the Size of the Original

The image processor circuit identifies the size of an original according to Tables 3-200 through -208 based on the combination of the sensor outputs.

- No Change
  The sensor output occurring when the copyboard cover is brought down to 30° and the sensor output 15 sec thereafter are the same, i.e., an original is detected.
- Change
  The sensor output occurring when the copyboard cover is brought down to 30° and when it is fully down are different, i.e., no original is detected.

Original size	Original size sensor			
	1	2	3	4
A3	No change	No change	No change	No change
B4	Change	No change	No change	No change
A4R	Change	Change	No change	No change
A4	No change	No change	Change	Change
B5	Change	No change	Change	Change
B5R	Change	Change	No change	Change
None	Change	Change	Change	Change

Table 3-206 (A/B-configuration)

Original size	Original size sensor		
	2	3	5
11"X17"	No change	No change	No change
LGL	Change	No change	No change
LTR-R	Change	No change	Change
LTR	No change	Change	Change

Table 3-207 (Inch-configuration)

Original size	Original size sensor	
	1	3
A3	No change	No change
A4R	Change	No change
A4	No change	Change

Table 3-208 (A-configuration)

4. Identifying the Original Size by the DF

a. Outline

The size of originals set in the DF (option) is identified in response to instructions from the copier.

① If all cassettes are of the AB-configuration, the copier instructs the DF to identify AB sizes.

② If all cassettes are of the Inch-configuration, the copier instructs the DF to identify Inch sizes.

③ If both AB- and Inch-configuration cassettes are set, the copier instructs the DF for size identification according to the data entered under 'settings by model' in service mode (✱5✱).

There may be a missing image, however, if the original and the copy paper are of different configurations (AB/Inch).

In addition, since the DF used for the copier sets originals on the copyboard based on what is called center reference, different positions of an image are affected when book mode is used (original rear reference).

Example 1 (A4 original, LTR copy)

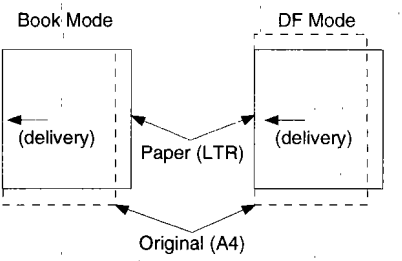

Figure 3-210

- In the case of an A4 original and a LTR copy, the bottom of the original in book mode and the top and the bottom of the original will be missing.

Example 2 (A4 original, enlarge, LTR copy)
DF Mode

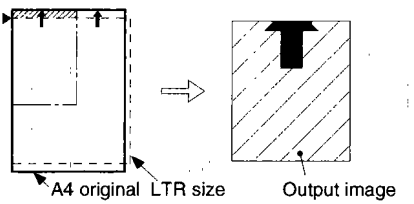

Figure 3-211

- The original will be identified as LTR and enlarged with reference to the triangle (▶), causing a missing image.

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Example (LTR original, enlargement, A4 copy)
DF Mode

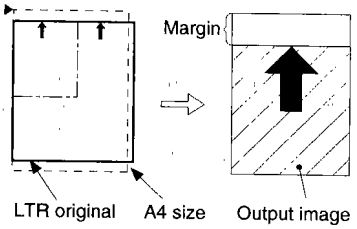

Figure 3-212

- The original will be identified as A4 and enlarged with reference to the triangle (▶), causing the margin at the top of the copy to increase.

Example 4 (A4 original, area specified, LTR copy)

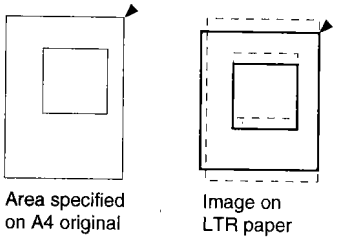

Figure 3-213

- The original will be identified as LTR, shifting the point of reference (▶) and also the specified area.

Example 5 (LTR original, area specified, A4 copy)

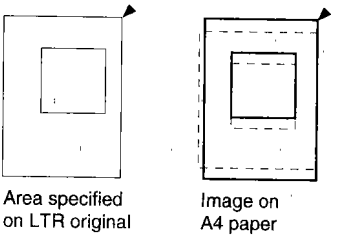

Figure 3-214

- The original will be identified as A4, shifting the specified area on the original.

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III. IMAGE PROCESSING SYSTEM

A. Outline

The image processing system converts the optical images directed to the CCD into electrical signals and sends the signals to the laser exposure system or the communications system after correction and processing.

The GP30F's CCD driver is constructed as a single entity with the analog processor PCB.

Because of its construction characteristics, the image processing system appears to consist of the CCD, analog processor PCB, and image processor PCB.

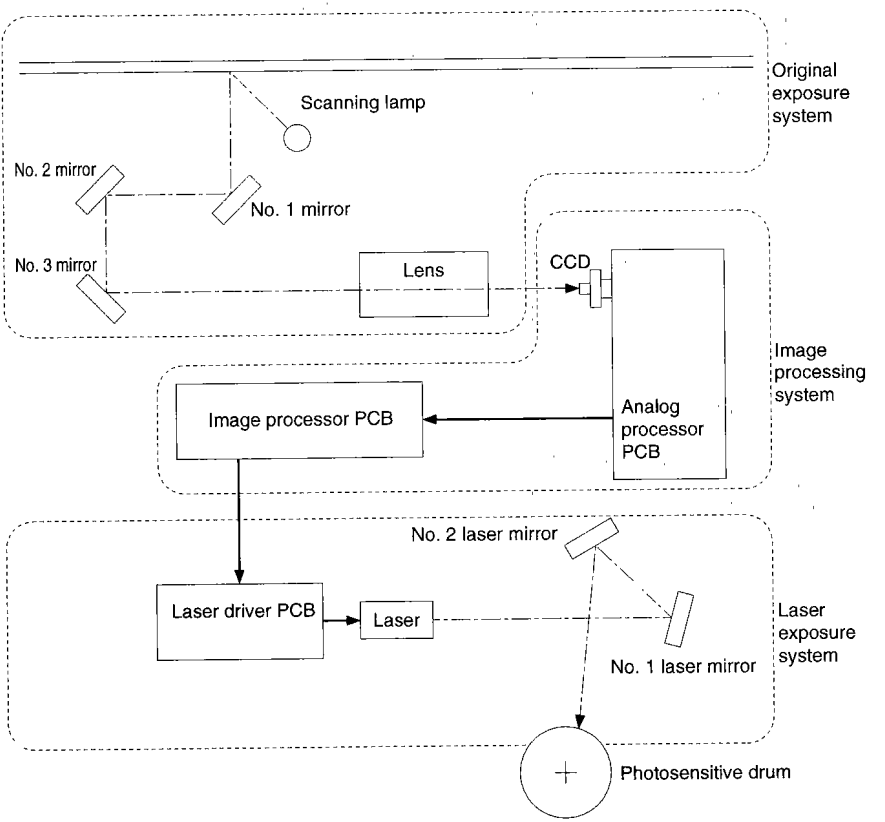

Figure 3-301

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B. Analog Image Processing

1. CCD

The GP30F's CCD is a black-and-white line sensor with a single line of photocells; its number of pixels and the pixel size are as follows:

number of pixels: 5,000
size of pixel: 7 µm x 7 µm

The signal charges representing odd-number pixels and even-number pixels are sent to separate transfer units for transfer.

The signal charges are then synthesized by the CCD and sent to the emitter-follower in the form of image signals.

The clock pulse signals used to drive the CCD are generated by the image processor PCB.

2. A/D Conversion Circuit

The emitter-follower lowers the impedance of the image signals generated by the CCD and removes the DC component; then, it sends the signals to the A/D conversion circuit.

In the A/D conversion circuit, the signals are converted into 8-bit digital signals timed with the clock pulses coming from the image processor PCB.

The digital signals are sent to the image processor PCB as image signals.

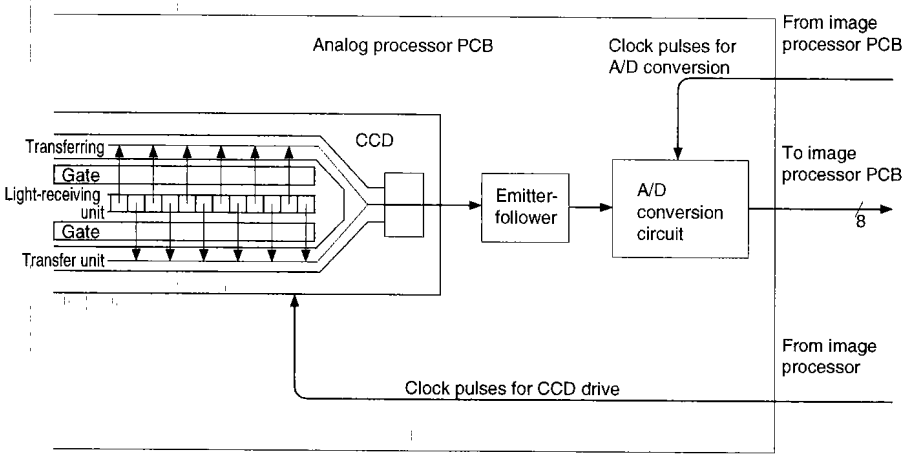

Figure 3-302

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C. Digital Image Processing

1. Outline

The digital image processing block processes the image signals from the analog image processing block according to the selected mode.

The circuit may roughly be divided into two: the image processing block, which processes the images according to the instructions from the control panel, and the device image processing block, which processes the signals for generation of image signals sent to the control panel, and the Multi Device Controller (option).

Figure 3-303 is a block diagram depicting the divisions, and Figure 3-304 is a block diagram describing the particulars of image processing.

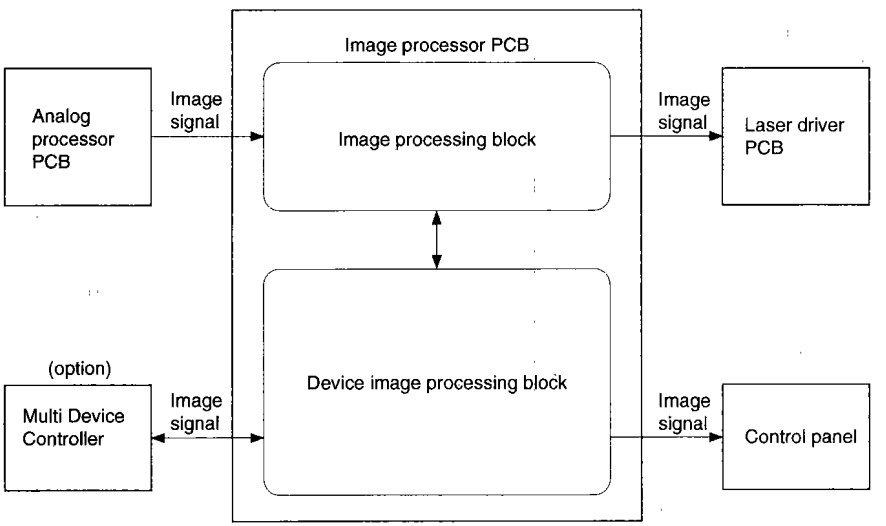

Figure 3-303

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■ Image Processing Block Diagram

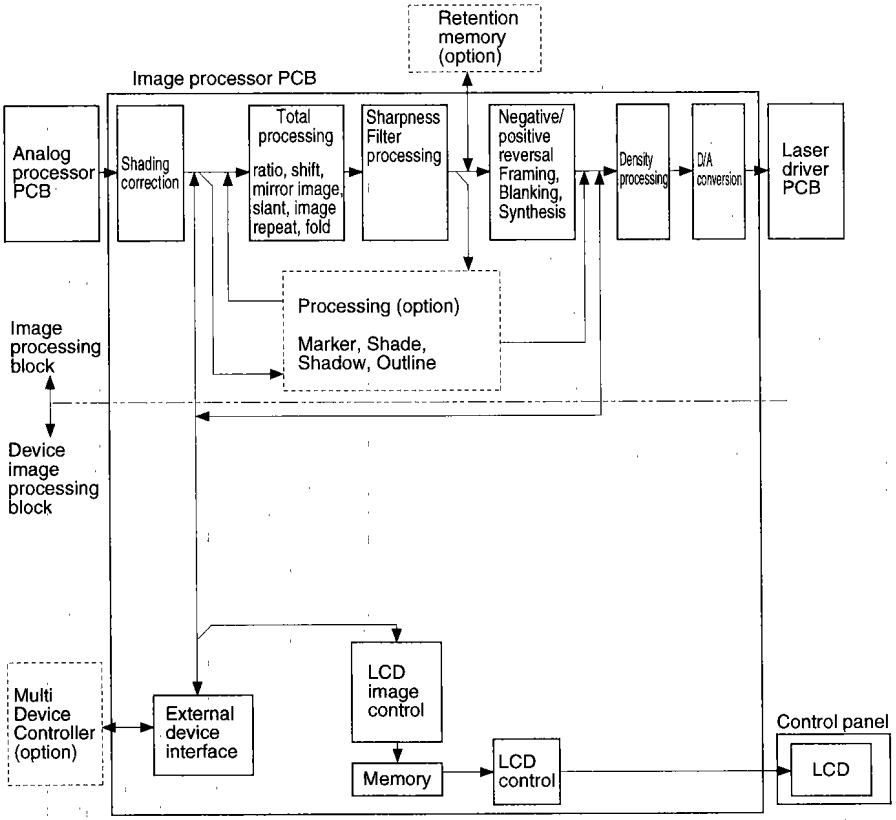

Figure 3-304

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D. Image Processing Block

1. Shading Correction

The output of the CCD may not always be uniform even if the CCD receives the reflected light from an original of uniform density because of the following factors:

a. The pixels of the CCD may vary in sensitivity.
b. The degree of transmission varies between the center of the lens and its periphery.
c. The intensity of the scanner lamp varies between the center and both ends.
d. The scanning lamp deteriorates over time.

Shading correction is executed to compensate for the discrepancies caused by foregoing factors.

In shading correction, the scanning lamp is turned on to illuminate the standard white plate.

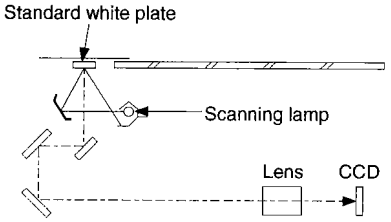

Figure 3-305

The CCD measures the intensity of the light reflected by the standard white plate and generates data representing the intensity.

The shading correction circuit compares the data (measurement) and the target value (Reference 1), and stores the difference as the shading correction value.

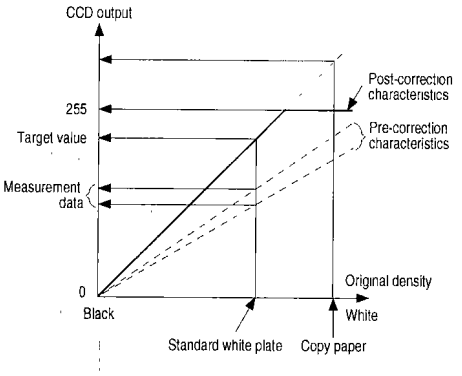

Figure 3-306 Shading Correction

The shading correction value is used to ensure that the data collected when scanning the original is uniform.

Measurements to obtain the shading correction value are taken each time the Copy Start key is pressed.

Reference:

1. The target value of the standard white plate is determined when a blank sheet of paper (standard white) is set on the copyboard and SHADING (for factory/R&D) in service mode [*][4][*] is executed.
2. If the standard white plate has scratches or dirt, shading correction is likely to be too strong for the portion, causing vertical white lines on the copies.

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2. Total Processing

The circuit processes data for the following:

- reproduction ratio
- shift
- mirror image
- slant
- image repeat
- folding

a. Reproduction Ratio

① Horizontal Reproduction Ratio (main scanning direction)
When writing data units into memory, some units are skipped (reduction); when reading data units from memory, some units are read several times (enlargement).

② Vertical Reproduction Ratio (sub scanning direction)
The scanner is moved at different speeds, thereby varying the scanning width in relation to each pixel on the original.

See Table 3-301 for how the GP30F processes reproduction ratios.

③ Zoom Fine-Adjustment
You can fine-adjust both vertical and horizontal reproduction ratios in 0.1%-increments in user mode (zoom fine adjustment); for instance, if 'adjustment width + 1%' (for both X and Y),
50%: 51%
100%: 101%
400%: 401%

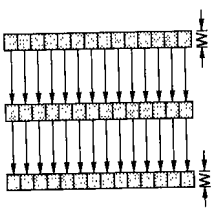
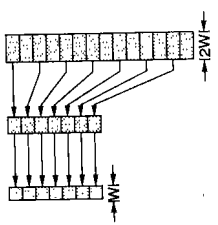
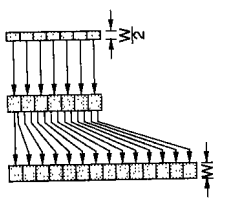
	DIRECT	REDUCE	ENLARGE
Original (image data) (write in) Line memory (read out) Copy			
Ratio in main scanning direction	All data units are written into memory as they are and read from memory as they are.	To reduce by 1/2, every other data units are written into memory.	To enlarge by 2, all data units are written into memory as they are but read twice.
Ratio in sub scanning direction		The scanner is moved faster, thereby increasing the scanning width per pixel on the original.	The scanner is moved at a lower rate, thereby reducing the scanning width per pixel on the original.

Table 3-301

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b. Shift

See Figures 3-307 through -309 for how a shift may be made in main and sub scanning directions.

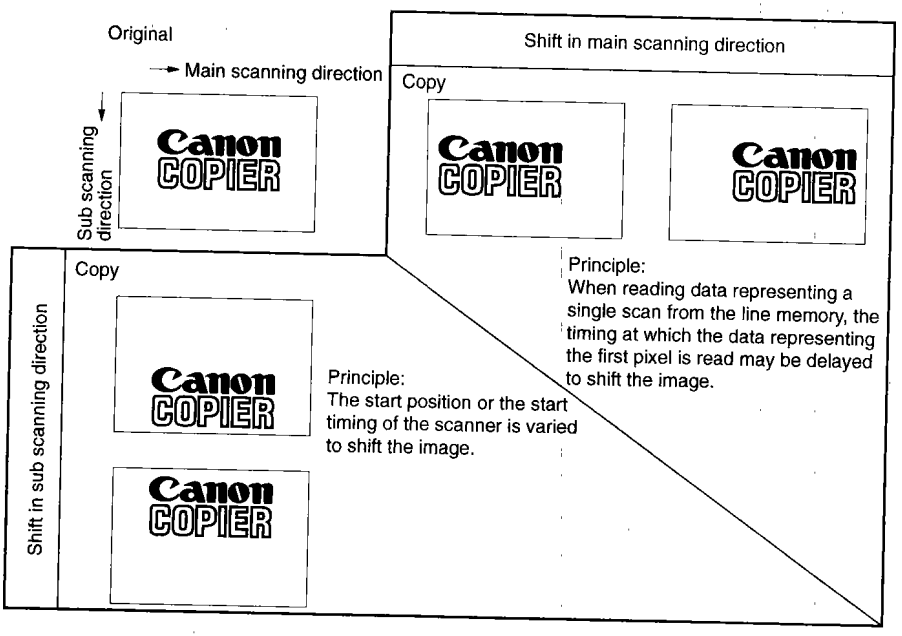
Original
Main scanning direction
Sub scanning direction
Shift in main scanning direction
Copy
Shift in sub scanning direction
Copy
Principle:
When reading data representing a single scan from the line memory, the timing at which the data representing the first pixel is read may be delayed to shift the image.
Principle:
The start position or the start timing of the scanner is varied to shift the image.

Figure 3-307

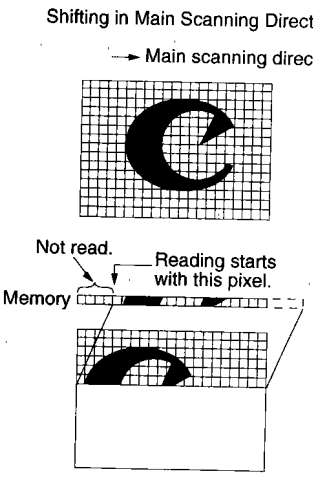

Figure 3-308

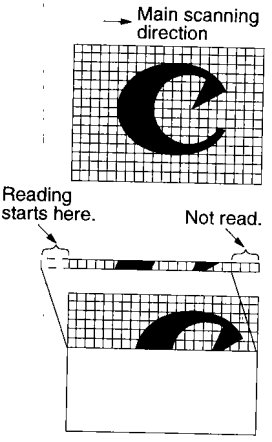

Figure 3-309

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By combining shifts in both main and sub scanning directions, the following shifts are possible:

① Corner Shift

The coordinates (X1, Y1) of the point to be shifted are shifted to any of the four corners of the copy paper.

② Center Shift

The coordinates (Xm, Ym) of a point by which the margins on the top/bottom and the left/right of the copy will be the same are computed based on the size of the area to be shifted and the size of the copy paper, and the coordinates X1/Y1 are shifted to the point.

Reference:

$$Xm = \frac{Xmax - (X_2 - X_1)}{2},$$

$$Ym = \frac{Ymax - (Y_2 - Y_1)}{2},$$

③ Specified Shift

The coordinates of a point (X1, Y1) are shifted to a specified point (Xp, Yp).

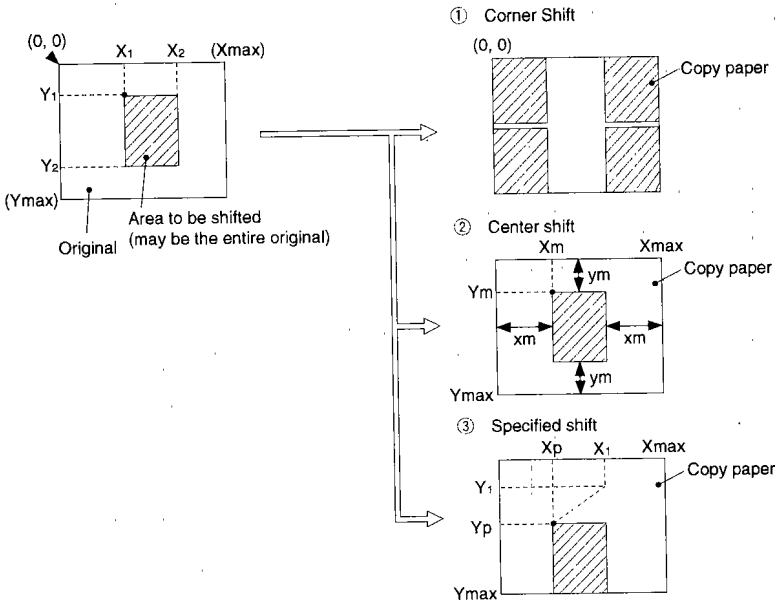

Figure 3-310

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c. Image Composition

In image composition mode, any of the following two modes may be used:

① 2-on-1 mode, in which two originals are reduced and copied on one sheet of copy paper.

② 4-on-1 mode, in which four originals are reduced and copied on one sheet of copy paper.

These modes combine ratio, shift, and overlay processing mechanisms, and these mechanisms must be controlled simultaneously.

In ratio processing, the size of the original and the size of the copy paper are used to compute the appropriate reproduction ratio.

- formula for lengthwise direction
  - a: length of copy paper ÷ (length of original x 2)
  - b: length of copy paper ÷ length of original
- formula for breadthwise direction
  - c: width of copy paper ÷ (width of original x 2)
  - d: width of copy paper ÷ width of original

If the reproduction ratios in lengthwise and breadthwise directions differ, the smaller of the two will be selected.

However, the reproduction ratio is controlled within 25% and 400%.

The shift and overlay processing mechanisms are controlled as explained on the next page.

Combination with a DF and a duplexing unit brings about the modes shown in Table 3-303.

Mode	Duplexing unit	RDF/ADF	Length formula	Width formula
2-on-1 (overlay)	○	×	b	c
2-on-1 (continuous)	×	○	a	d
2-on-1 (two-sided)	○	○	a	d
4-on-1	○	○	a	c

○ : required.

× : optional.

Table 3-302

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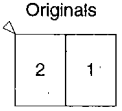
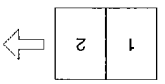
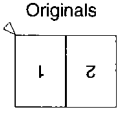
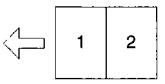
2-on-1 mode (continuous, two-sided)	Original (A4X2)		Copy (ARX1)
Mode	Original orientation on copyboard glass	Image arrangement after copying (⇦ arrow indicating feeding direction)	Remarks
• Book mode • RDF in use	Originals  Two originals are placed side by side on the copyboard.	Copies 	• Used for reduced copies only. • May be used for two-sided copies also. • When originals are fed, the RDF's original reversing mechanism is used to change the order of pages. Normally, 1 2; changed to 2 1.
• ADF in use	Originals  Two originals are placed side by side on the copyboard.	Copies 	• Used in reduced copies only. • May be used for two-sided copies also. • The ADF does not have an original reversing function, not capable of changing the order of pages. • Turn around the originals when placing them on ADF's original tray. Normally, ⇦ A change to ⇦ A

Table 3-303 2-on-1 Mode (continuous, two-sided)

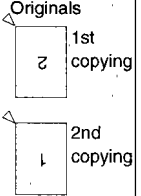
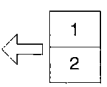
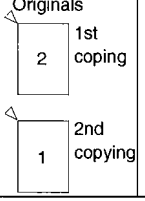
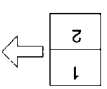
2-on-1 (overlay)	Original (A4X2)		Copy (A4X1)
Mode	Original orientation on copyboard	Image arrangement after copying (⇦ arrow indicating feeding direction)	Remarks
• Book mode • ADF in use	Originals  1st copying 2nd copying	Copies 	• Combines the following: reduced copying image shifting overlay copying
• RDF in use	Originals  1st coping 2nd copying	Copies 	• Combines the following: reduced copying image shifting overlay copying

Table 3-304 2-on-1 Mode (overlay)

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4-on-1	Original (A4X4)				Copy (A4X1)
	1	2	3	4	1 2 / 3 4

Mode	Copying	Original orientation on copyboard	Image arrangement after copying (arrow indicating feeding direction)	Remarks
• Book mode	1st copying	Original: 2 1	Copies: 2 1	• Combines the following: reduced copying, image shifting, overlay copying
	2nd copying	Originals: 4 3	Copies: 4 3 / 2 1	
• RDF in use	1st copying	Originals: 4 3	Copies: 4 3	• Combines the following: reduced copying, image shifting, overlay copying
	2nd copying	Originals: 2 1	Copies: 4 3 / 2 1	• When originals are fed, the RDF's original reversing mechanism is used to change the order of pages. Normally, [3 4] ; changed to [1 2] . [4 3] [2 1]
• ADF in use	1st copying	Originals: 3 4	Copies: 3 4	• Combines the following: reduced copying, image shifting, overlay copying
	2nd copying	Originals: 1 2	Copies: 1 2 / 3 4	• The ADF does not have an original reversing function, not capable of changing the order of pages. • Turn around the originals when placing them on the ADF's original tray. Normally, ⇦[A]; changed to ⇦[∀].

Table 3-305 4-on-1 Mode

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d. Mirror Image

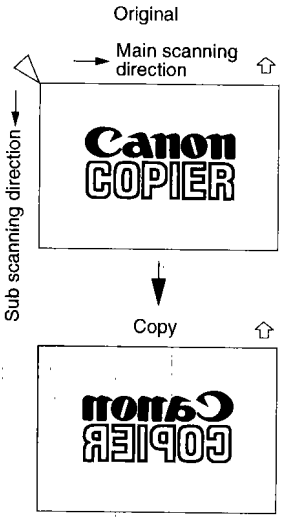

Figure 3-311

Principle

When reading data representing a single scan from RAM, reading starts in reverse order, thereby creating a mirror image in relation to the main scanning direction.

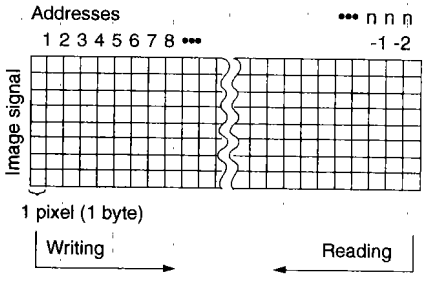

Figure 3-312

e. Folding

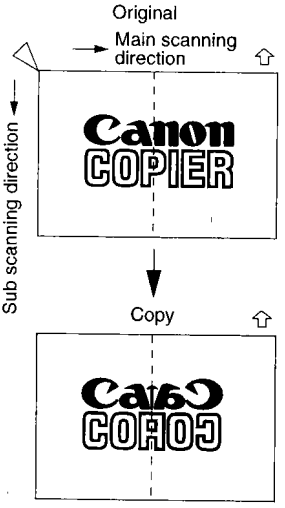

Figure 3-313

Principle

When reading data representing a single scan from RAM, reading starts in normal order yet reverses at a turning point, creating a folding image in relation to the main scanning direction.

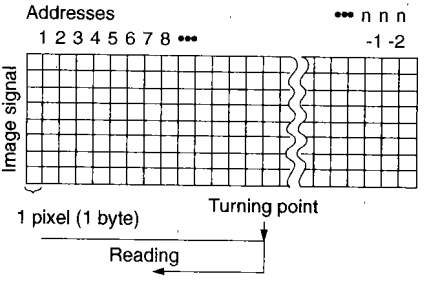

Figure 3-314

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f. Repeat

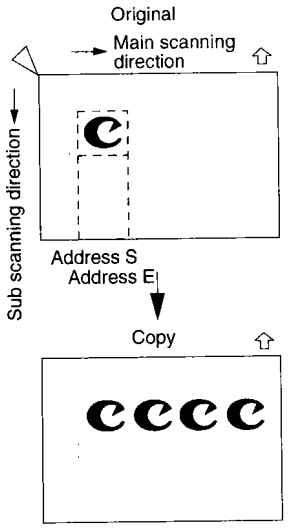

Figure 3-315

Principle

When reading data representing a single scan from the RAM, the read start address (address S) and the read end address (address E) are specified; reading starts at address S and returns to address S once again after arriving at address E. An image is repeated by repeating this operation.

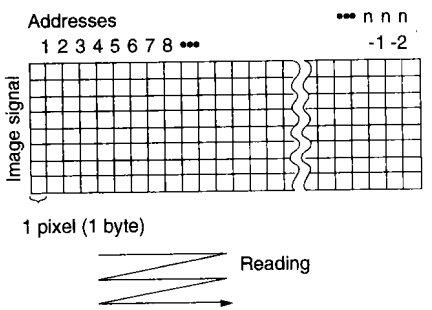

Figure 3-316

g. Slant

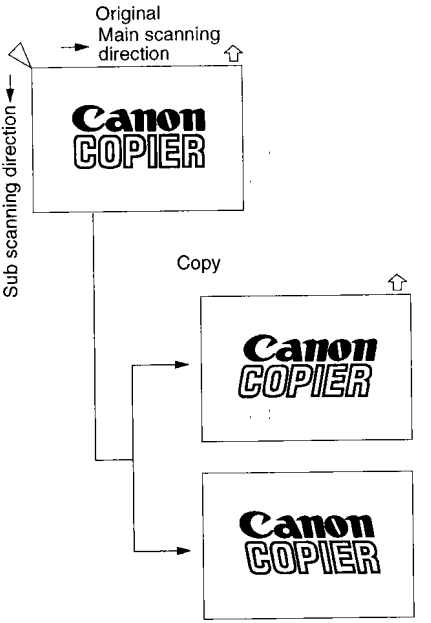

Figure 3-317

Principle

When reading data representing a single scan from RAM, the read start address (address S) is shifted by several lines to create a slant image.

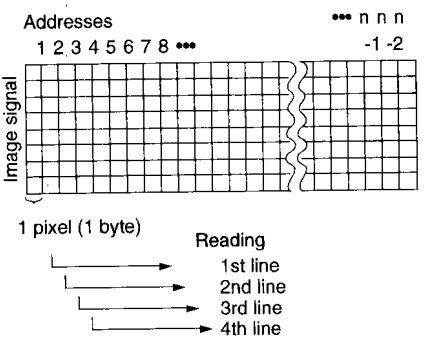

Figure 3-318

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3. Sharpness/Filter Processing

a. Sharpness/Filter Processing

Computations are made so as to generate a crisp or a soft image to suit the setting made on the control panel in sharpness mode.

Figure 3-319b shows the output level occurring when image data like the one shown in Figure 3-319a is fed and 'sharpness weak' is selected.

In 'sharpness weak', the differences in the degree of density of the image are smoothed out to generate a soft image—the process can also make moiré effects less conspicuous.

Figure 3-319c shows the output level occurring when 'sharpness strong' is selected.

In 'sharpness strong', the differences in the degree of density of the image are emphasized to generate a crisp image.

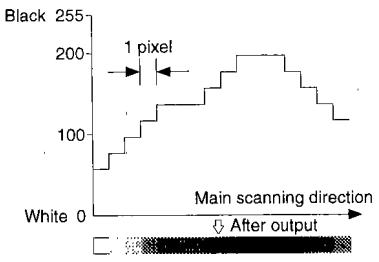

Figure 3-319a Input Level

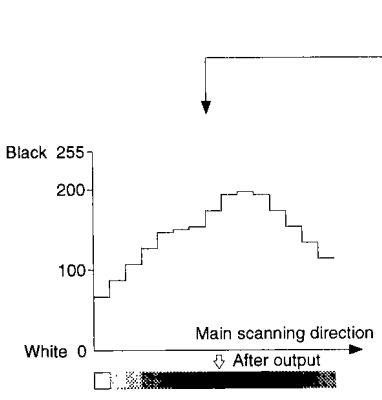

Figure 3-319b Sharpness Weak

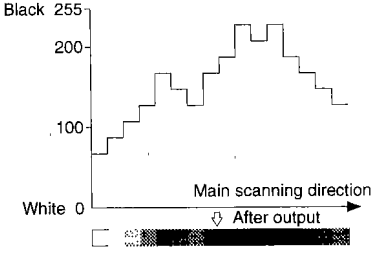

Figure 3-319c Sharpness Strong

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b. AI Outline Processing

In AI outline processing, edges of characters are emphasized.

If image data like the data shown in Figure 3-320 is fed, the GP30F assumes that the data represents text and executes outline processing.

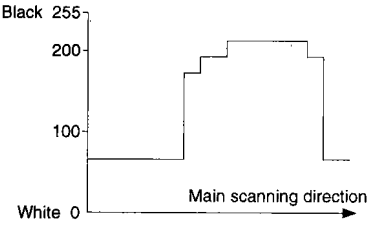

Figure 3-320 Image Data of Text

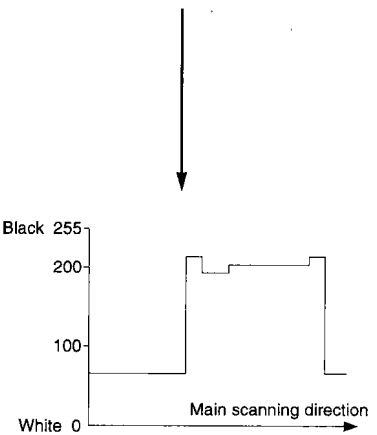

Figure 3-321 Image Data after Outline Processing

If image data like the data shown in Figure 3-322 is fed, the GP30F assumes that the data represents a photo and does not execute outline processing.

The GP30F does not execute outline processing for such printed originals as illustrations made of dots.

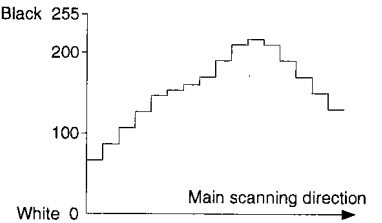

Figure 3-322 Image Data of Photo

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4. Negative/Positive Reversal

In the negative/positive reversal PCB, the following processing is executed:

- negative/positive reversal
- framing
- blanking
- paste-in synthesis

a. Negative/Positive Reversal

The level of the signals is converted so that the white area of the original turns black and the black area turns white.

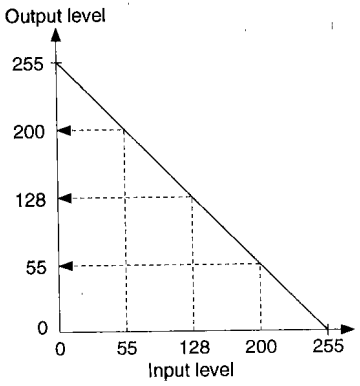

Figure 3-323 Conceptual Diagram of Level Conversion

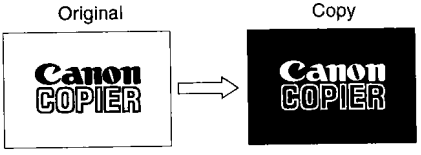

Figure 3-324

b. Framing/Blanking

For framing and blanking, as many as four areas and as many as ten points may be specified.

■ Framing

The signals representing areas outside the specified area are forced to represent white.

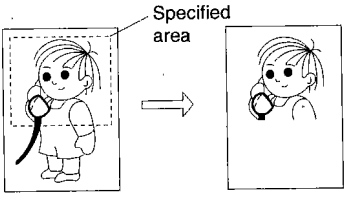

Figure 3-325 Framing

■ Blanking

As opposed to framing, the signals representing the specified area are forced to represent white.

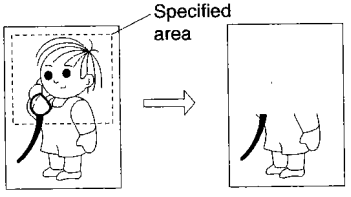

Figure 3-326 Blanking

c. Synthesis (paste-in)

This function is available only when the retention memory unit (option) is installed. An image stored in retention memory is synthesized with the image from the original placed on the copyboard for output.

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5. Density Processing

a. Logarithmic Correction

Although the CCD output has linear characteristics in relation to the intensity of light reflected by an original, the density felt by the eye looking at the same original is not linear in relation to the intensity of the reflected light.

Figure 3-327 shows the relationship between the CCD output and the density of an original as it appears to the eye.

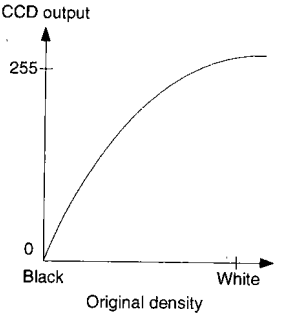

Figure 3-327

To correct the discrepancy, a correction curve like the one shown in Figure 3-328 is used for level conversion.

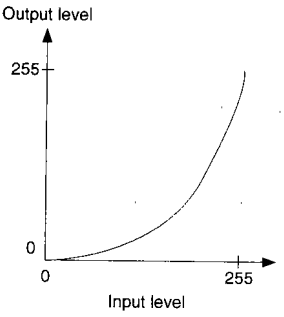

Figure 3-328

b. Density Processing

The correction curve for density processing varies in response to the following:

1 setting of the Copy Density key on the control panel
2 results of AE measurements
3 selection of photo mode

According to the setting of the Copy Density key, the curve shifts for dark or light as shown in Figure 3-329.

If photo mode is selected, a curve that ensures good gradation and faithful reproduction of the density of the original (Figure 3-330) is selected.

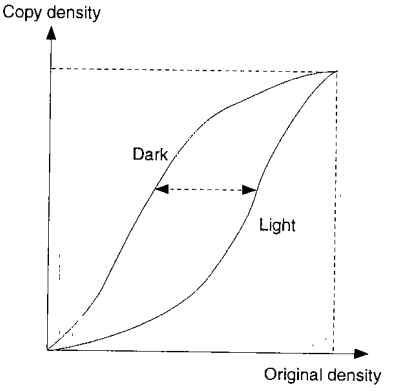

Figure 3-329

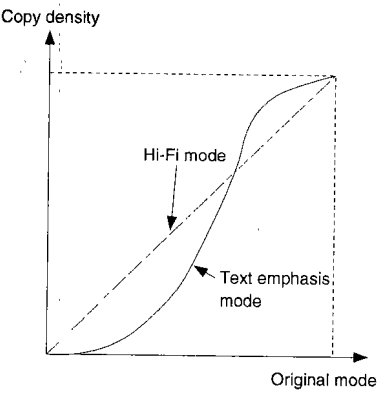

Figure 3-330

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The GP30F's AE mechanism changes the density correction curve according to the type of document.

To this end, in AE mode, the scanner is moved forward to suit the size of the original identified so that the entire face of the original is measured for density (full scanning; may be changed to half scanning in service mode).

During the scan, the density of the background of the original and the density of the image are measured, thereby classifying the original into any of the following three types:

① Background Type Original
The original is identified as being of a white background or of a light density with text.

② Reverse Type Original
The original is identified as being of a colored background or of a light density with reversed text.

③ Others
The original is identified as being with little change in density (photo, etc.).

According to the classification, any of the following three AE tables is selected and density correction is executed by generating a correction table that suits the original.

If a DF or RF is used, AE is executed for each original picked up.

In page separation mode, a single AE scan is used to measure the density, thereby deciding on an AE table.

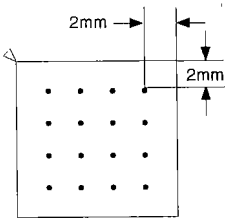

Figure 3-334 Points of AE Measurement

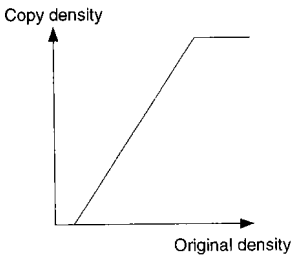

Figure 3-331

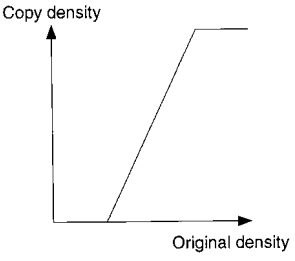

Figure 3-332

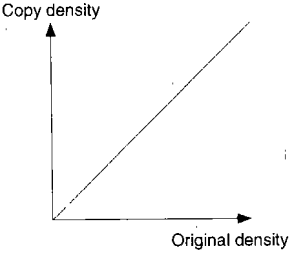

Figure 3-333

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6. Extra Processing (option)

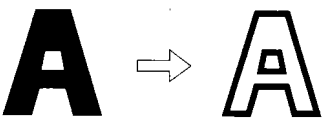
a. Outline

What is termed extra processing refefers to image processing executed on the image processing PCB, which includes the following:

i. outline processing
ii. shading
iii. shadowing
iv. marker processing

b. Outline Processing

In outline processing, the outline of an image is turned black and the rest is turned white.



Original After outline processing

Figure 3-335

In outline processing, the image data is converted into binary data so that high-level units will be black and low-level units will be white; the outline is generated using the binary units that represent black.

For instance, the slice level is set to '1' and data units are studied; the results are generated as black or white data used for the generation of outline signals.

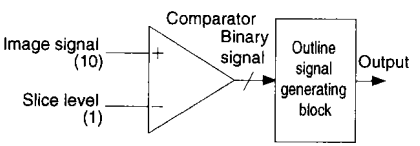


Figure 3-336

Figure 3-337 shows the relationship between image signals and slice level as well as the results of comparison.

The slice level may be changed using 'IC-DENS' in service mode.

The inner or outer outline may be selected; moreover, the thickness of the outline may be varied between 0.25 and 1.5 mm in 0.250-mm increments.

Selecting the outer outline, however, will disable reversing the outline when background shading is used.

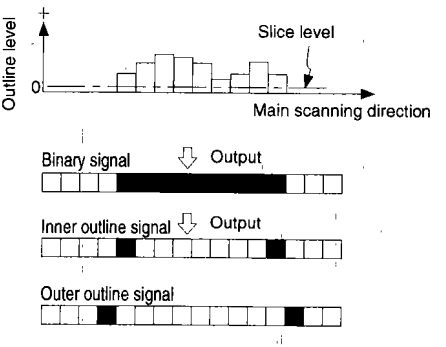


Figure 3-337

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c. Shading

As shown in Table 3-306, two types of shading are available; in shading mode, shading is applied to the original image when generating copies.

The data used for shading consists of such patterns as shown in Figure 3-338 which are stored in the RAM on the image processor PCB.

In the RAM, as many as 16 shading patterns and 8 gradation patterns are stored; as necessary, appropriate data is read repeatedly to generate data for shading.

```
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
```

Figure 3-338 Shading Data in RAM

Of the 16 shading patterns, 8 may be the user's original patterns stored by reading them by the scanner.

Note that the scanner makes two scans when reading a pattern for storage in memory: the first scan for identification of the position, and the second scan for actual reading.

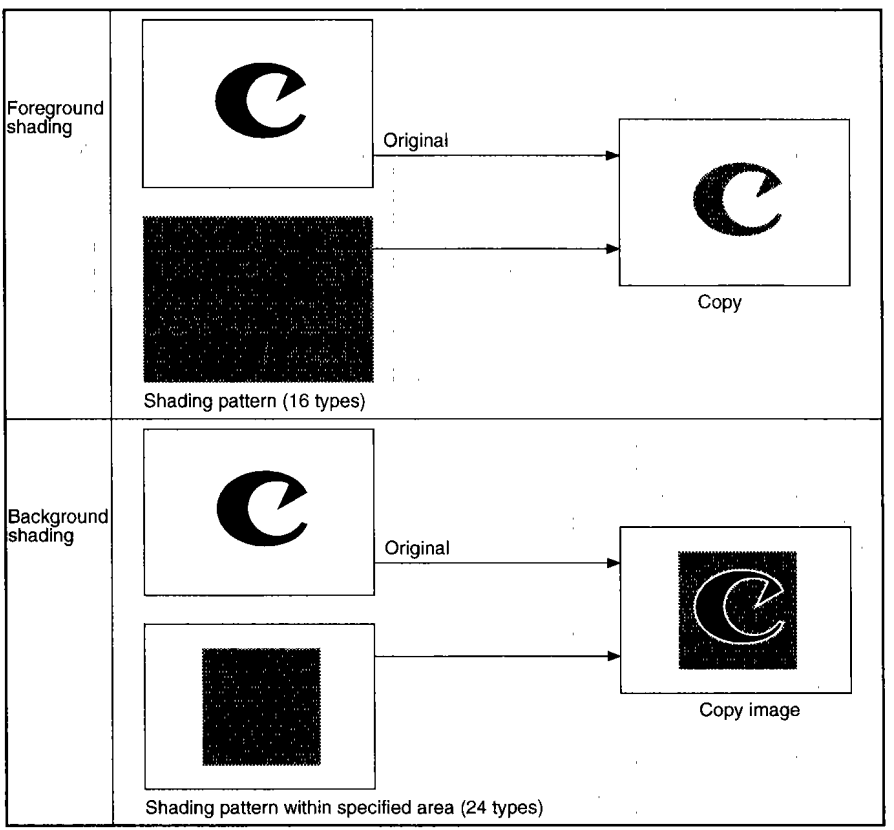

Table 3-306

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d. Shadowing

In shadowing, the image data is output for a second time with a delay in relation to the original image, thereby putting a shadow to the original image.

Shadowing may be either of the following four types; the angle of the shadow, however, cannot be changed:

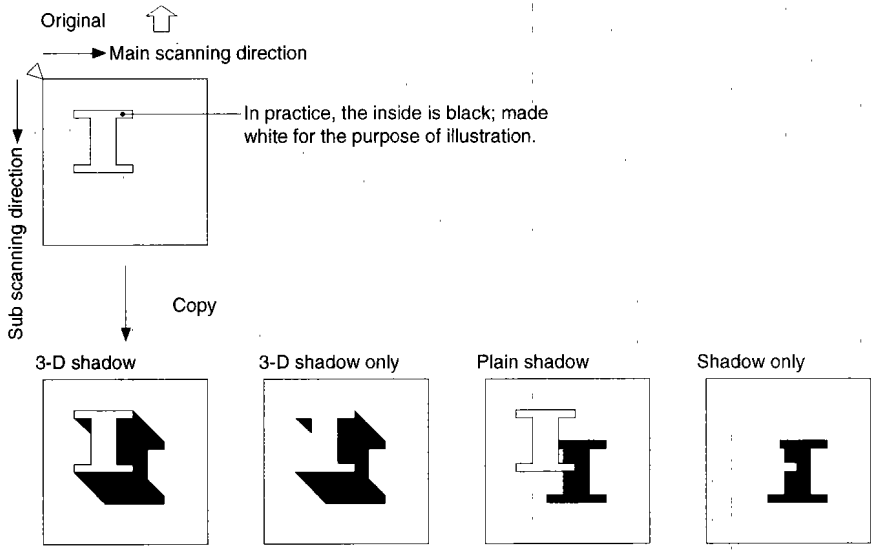

Figure 3-339

Principle

When reading data representing a single scan from the RAM, a shift is made for a single address each time the read start address (S address) is read, thereby creating a shadow.

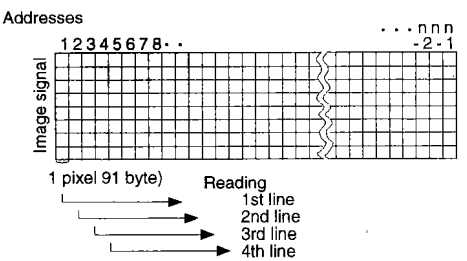

Figure 3-340

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e. Marker Processing

In marker mode, the area enclosed by a highlight pen is identified as the area to be processed.

The identification of such an area is based on the density level of the area.

To identify the presence of text and the density of the original by way of distinguishing them from the area, the following auxiliary processing mechanisms are executed when deciding on the area identification level:

① Marker Pre-Scan

The copier automatically enters AE mode when marker mode is selected. During the pre-scanning operation executed for AE measurement, measurements are also taken to determine the marker identification level, thereby fine-adjusting the marker identification level according to the original density level.

The pre-scanning mechanisms for AE and maker identification may be disabled independently of each other in user mode.

As mentioned, the copier automatically enters AE mode when marker mode is selected; this is to prevent the marking made on the original from appearing on the copy by affecting AE measurement.

② Adjusting the Marker Identification Level

The marker identification level may be adjusted in nine steps.

The adjustment may be made in user mode; the lower the stetting, the more readily light markings will be recognized.

■ Points to Note about Marker Mode

① You must use the special highlight pen when making markings.

② You must avoid originals with images on its back showing, prepared in pencil, with halftone images, or with creases.

③ You must limit overdrawing to twice.

④ You must avoid glossy paper or paper that does not absorb ink well.

⑤ You must make sure that the marking is solid without a break and it does not run over a black character.

⑥ You must make sure that the marker is 0.8 mm or thicker.

■ Be sure to use a highlight pen indicated in the User's Manual for area processing.

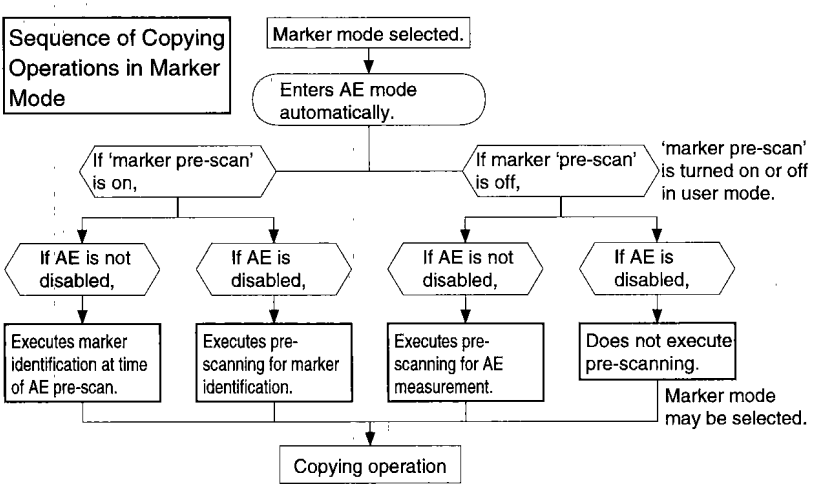
Sequence of Copying Operations in Marker Mode
Marker mode selected.
Enters AE mode automatically.
If 'marker pre-scan' is on,
If marker 'pre-scan' is off,
'marker pre-scan' is turned on or off in user mode.
If AE is not disabled,
If AE is disabled,
If AE is not disabled,
If AE is disabled,
Executes marker identification at time of AE pre-scan.
Executes pre-scanning for marker identification.
Executes pre-scanning for AE measurement.
Does not execute pre-scanning.
Marker mode may be selected.
Copying operation

Figure 3-341

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E. Device Image Processing Block

1. Controlling the LCD Images

Images used for fax transmission or obtained by fax reception and images coming from the Multi Device Controller are processed for display on the LCD of the control panel.

Image data units are skipped and stored in the display memory; the stored memory, in turn, is transferred to the LCD for display by the LCD control IC. See Figure 3-342 for a conceptual diagram of this process.

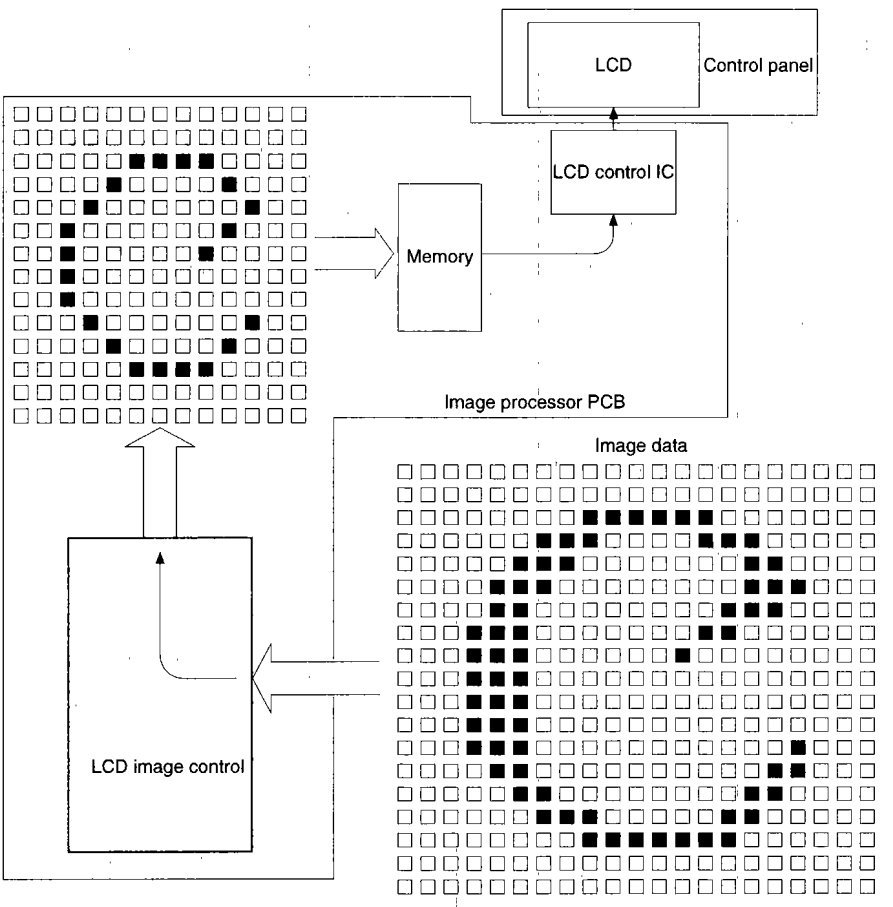

Figure 3-342

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IV. LASER EXPOSURE SYSTEM

A. Laser Processing Block

1. Outline

As mentioned in Chapter 2, the GP30F's copying process involves depositing toner in the light areas of the photosensitive drum to create visible images.

The laser scanning system consists of a laser unit, which is used as the source of laser light, and a laser scanning system, which has a 10-facet mirror used to scan the photosensitive drum.

The laser beam generated by the laser unit is converted into parallel light through a collimator lens and a cylindrical lens; then, the light is directed to the 10-facet mirror, which is rotating at a specific speed.

The laser beam reflected by the 10-facet mirror forms an image on the photosensitive drum with the help of the imaging lens located in front of the photosensitive drum.

When the 10-facet mirror rotates at a specific speed, the laser beam on the photosensitive drum scans the photosensitive drum at a specific speed, thereby removing charges from the drum.

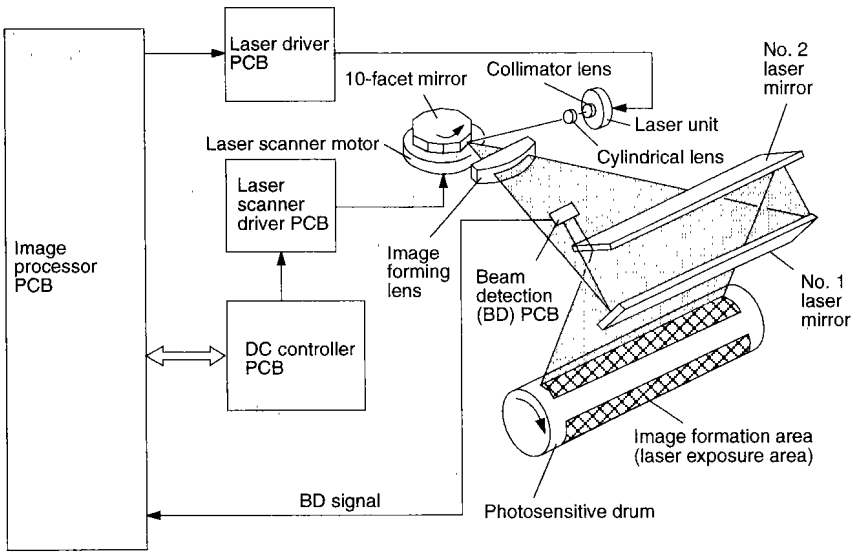

Figure 3-401

B. Generation of the BD Signal

Directing a laser beam representing a single scanning line on the photosensitive drum calls for the use of a scan start (horizontal sync) signal, and the beam detection (BD) signal is used to generate such a scan start signal.

The laser beam hitting the beam detection (BD) PCB located in the laser beam optical path is converted into an electrical signal (BD signal) and sent to the image processor circuit.

Based on the BD signal, the image data that has gone through digital image processing is sent to the laser driver PCB as the laser drive signal (LSRD).

If no BD signal is generated during image exposure, a BD signal error will be identified and 'E100' is indicated on the control panel.

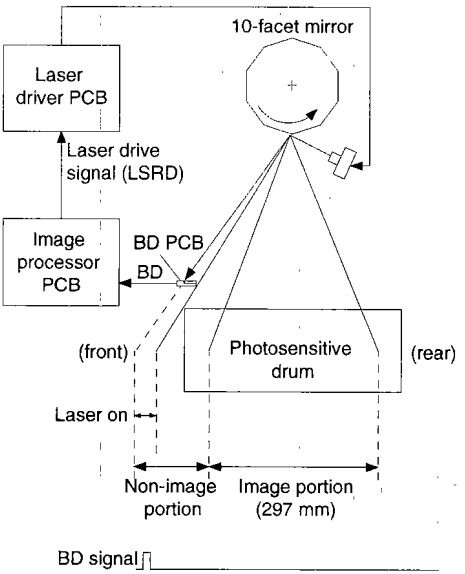

Figure 3-402 (conceptual diagram)

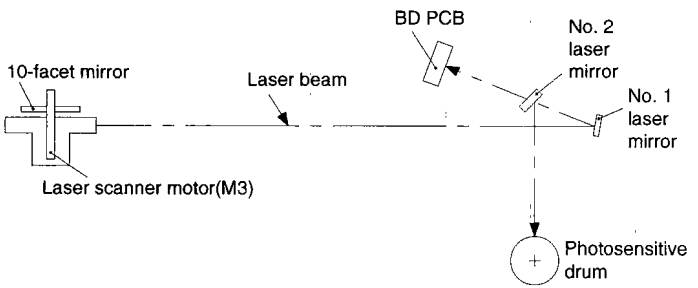

Figure 3-403 (cross section)

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C. Laser Driver Circuit

1. Operation

Changes in the ambient temperature can easily vary the intensity of the light generated by the laser.

The GP30F is not equipped with a mechanism to check ambient temperature and compensate for possible changes, its laser driver PCB is used to ensure that the laser intensity remains constant.

When the Copy Start key is pressed, the image processor PCB generates the bias control signal ($\overline{\text{APCON}}$) and the laser drive signal (LSRD) to the laser driver PCB, thereby turning on the bias control circuit and the constant current circuit and ultimately generating a laser beam.

The light is detected and its data is fed back to the bias control circuit to control the bias so that a specific intensity may be obtained free of the changes in ambient temperature; the light, in passing, is low-intensity light that is too weak to remove charges on the photosensitive drum.

This operation is executed between sets of lines, i.e., once every 423 µsec.

When the laser drive signal (LSRD) is input to the laser driver PCB under the bias, the laser unit generates a laser beam at a specific intensity.

The limit circuit is provided to prevent a current larger than a specific level from flowing into the laser element.

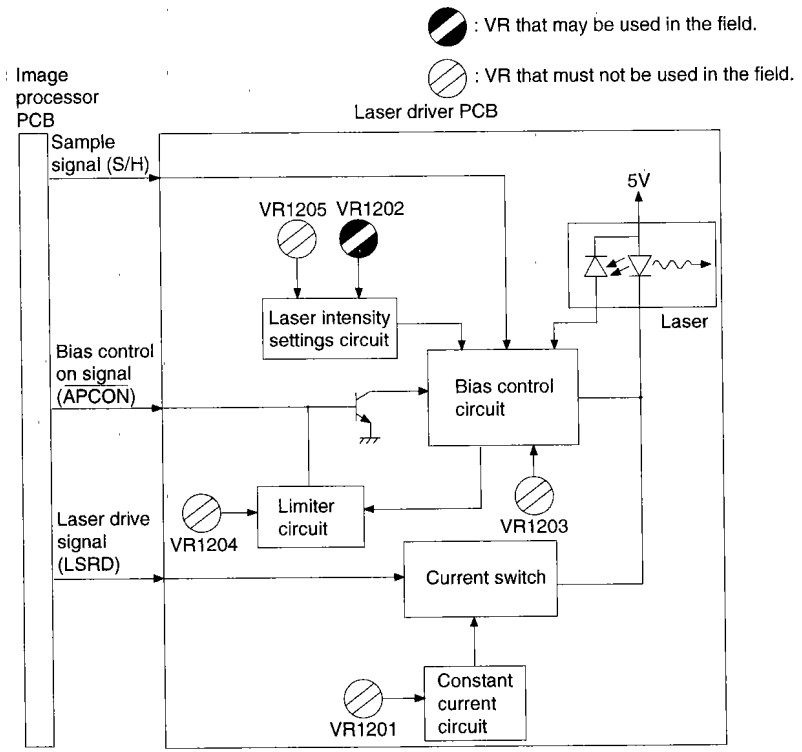

Figure 3-404

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2. Adjusting the Laser Intensity

You must go through the adjustment steps that follow whenever you have

① replaced the laser scanner unit,
② replaced the image processor PCB, or
③ noticed that the laser power has lowered over use.

a. Tools Needed
- Laser Power Checker (FY9-4008-000)
- Digital Multimeter (FY9-2002-000)

b. Making Adjustments

1) Turn off the rear main power switch.
2) Remove the copyboard glass.
3) Remove the rear cover.
4) Remove the screw, and remove the Laser Power Checker slot cover (inside).

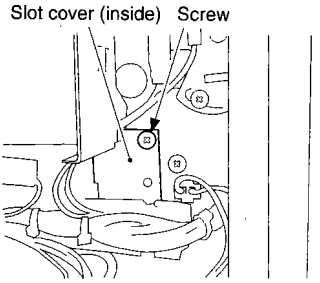

Figure 3-405

5) Pick the hook on the Laser Power Checker slot cover (outside) located behind the left cover, and remove the slot cover (outside).

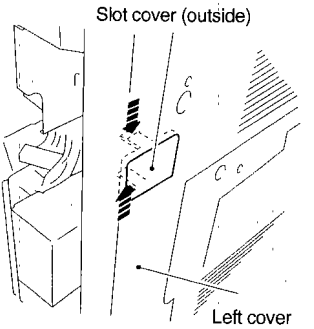

Figure 3-406

6) Shift the Laser Power Checker switch to position '2'.

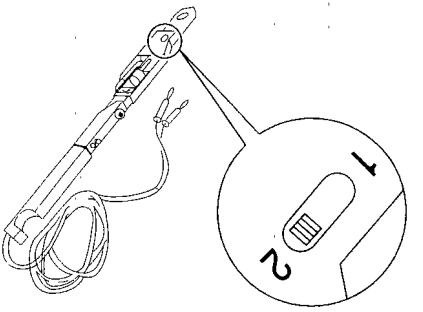

Figure 3-407

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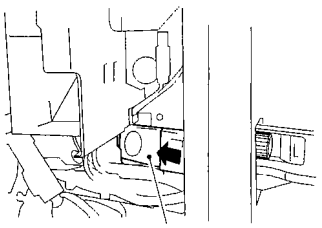
7) Insert the Laser Power Checker through the slot until it stops as shown in Figure 3-408.



Laser power checker

Figure 3-408

8) Insert the lead probes of the Laser Power Checker to the Digital Multimeter, and set the range to 200mVDC.
9) Open the front door, and insert the door switch actuator, and turn on the rear main power switch; then, while turning on the scanner safety switch (SW3), turn on the control panel power switch.
(You may turn off the scanner safety switch when the scanner has returned to the home position.)

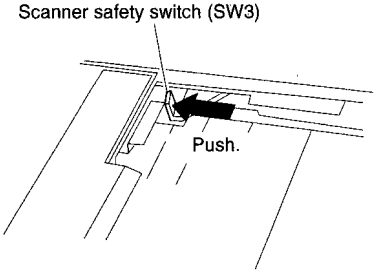


Figure 3-409 (left rear of copyboard)

10) Push the service switch with a hex key.
11) Press the * key once.
12) Press '*5*OPTION' on the screen to reverse the display.
13) Press the [OK] key.
14) Check that 'L-PWR-SW' is '0'.
15) Press the [Energy Saver] key.
16) Press '*4* FUNCTION' on the screen to reverse the display.
17) Press the [▶] key to select the Laser Adjustment screen; see Figure 3-410.

* 4 * FUNCTION 8
LSR-MRR (OK: START)
LASER (OK: START)
OFF (OK)

Figure 3-410 Laser Adjustment Screen

18) Press 'LASER'.
- The items LASER becomes highlighted.

19) Press the [OK] key.

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20) Turn VR1202 on the laser driver PCB so that the reading on the Digital Multimeter is '21.5 mV'.
- VR1202 is found to the rear left of the lens mount; see Figure 3-411.

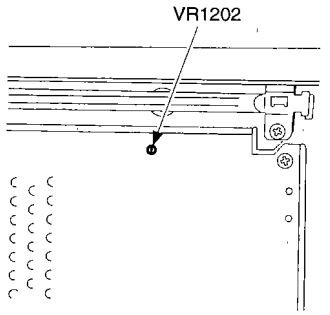

Figure 3-411

21) Press the OFF key on the screen; then, press the OK key to stop the generation of the laser beam.
22) Turn off the rear main power switch, and install the covers; then, turn on the rear main power switch and the control panel power switch.

Reference:
- Conceptual Diagram of Laser Adjustment

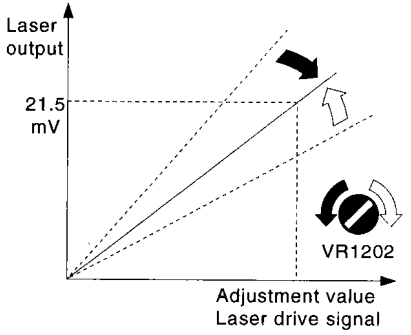

Figure 3-412

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D. Controlling the Laser Scanner Motor

Figure 3-413 shows the circuit that controls the laser scanner motor (M3) used to rotate the 10-facet mirror.

When the DC controller PCB turns the laser scanner drive signal (LMD) '0', the rotation speed control circuit controls the rotation speed by matching the clock pulses (LMCLK) generated by the laser scanner motor and the reference frequency; the current supplied to the motor is turned on and off at very short intervals, and rotation is controlled by varying these intervals.

The laser scanner motor has two rotation speeds; when the laser motor high speed signal (LMH) goes '1', the laser scanner motor is rotated at a high speed. The laser scanner motor is rotating at a high speed during copying operation; during standby, on the other hand, it is rotating at a low speed.

The arrangement serves to shorten the warm-up time while at the same time prolonging the life of the laser scanner motor.

As long as the frequency of LMCLK is within a specific range, the rotation speed control circuit generates the laser scanner motor ready signal (LMRDY=0). The DC controller circuit will issue 'E110' if LMRDY goes '1' while the laser scanner motor is rotating.

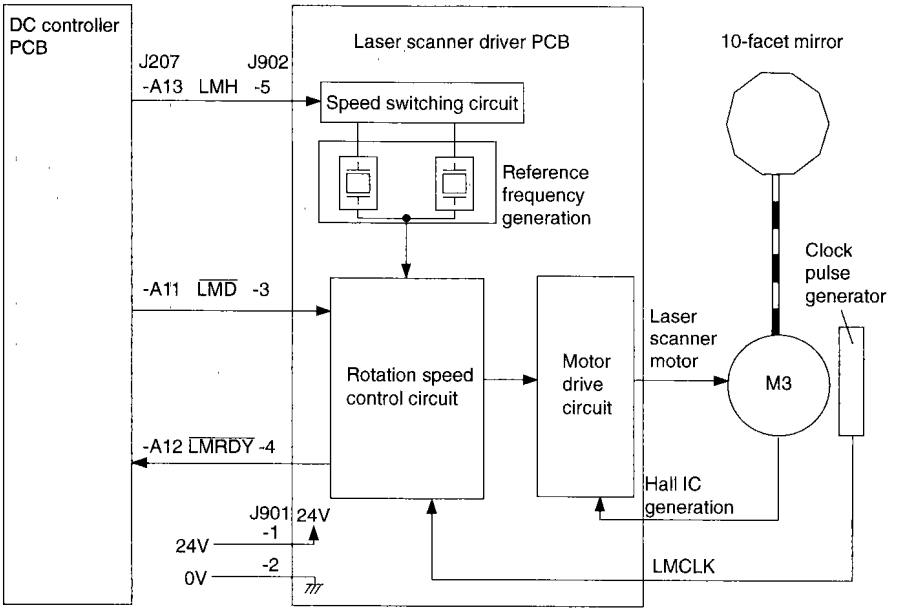

Figure 3-413

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V. IMAGE FORMATION SYSTEM

A. Outline

The GP30F's image formation system consists in the following:
- controlling the primary corona current.
- controlling the transfer corona current.
- controlling the grid bias constant voltage.
- controlling the constant current for the separation static eliminator output.
- controlling the DC component of the developing bias.
- turning on and off the AC component of the developing bias.
- turning on and off the transfer guide bias.

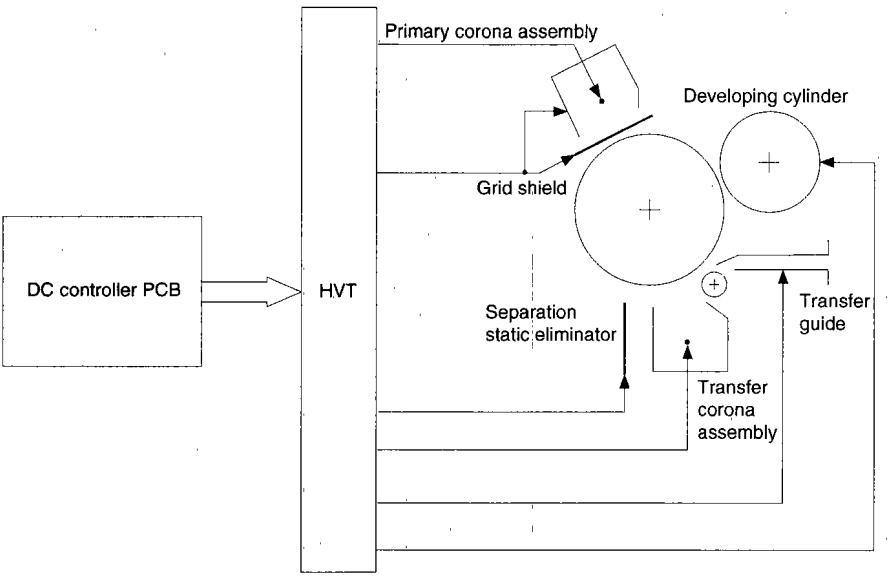

Figure 3-501

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B. Sequence of Operations (image formation system)

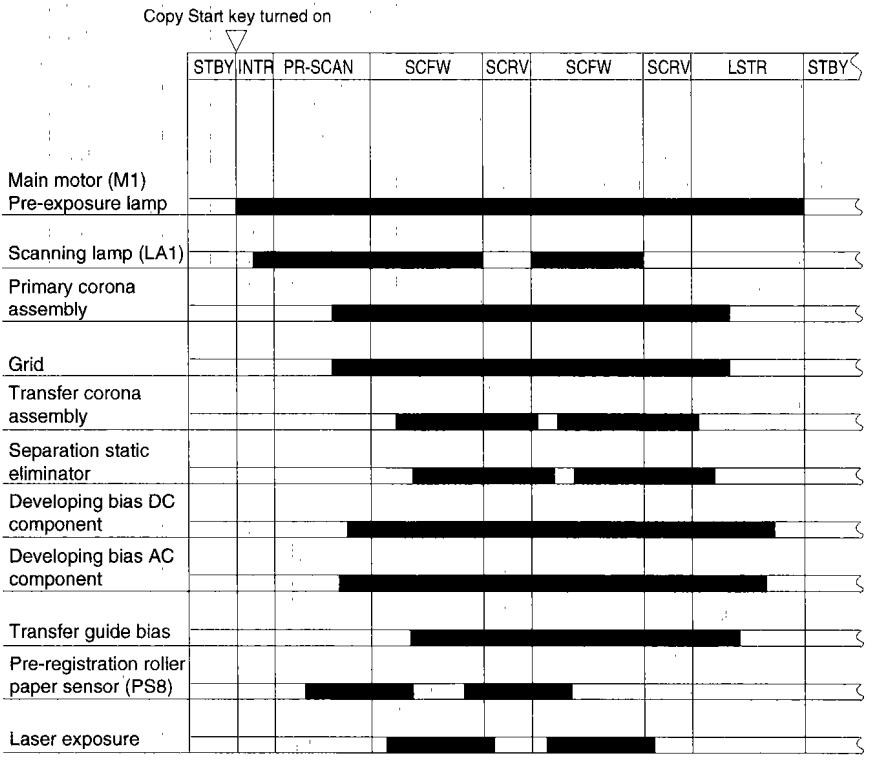

Figure 3-502

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C. Controlling the Primary/ Transfer Corona Current and the Voltage of the Grid Bias

1. Outline

Figure 3-503 shows the circuit that controls the primary/transfer corona current and the voltage level of the grid bias used for the primary corona assembly, and the circuit has the following functions:

① turning on and off the primary/transfer corona current.
② controlling the primary/transfer corona current to a specific level.
③ controlling the grid bias voltage of the primary corona assembly to a specific level.

The output of the GP30F's primary corona assembly and transfer corona assembly is controlled to a specific current level to reduce the effects of changes in the environment to the corona charging mechanism.

When making two-sided or overlay copies, the level of the transfer corona current is switched by the transfer corona level control signal (HVTCT) generated by the DC controller circuit.

In addition, a bias identical to the bias applied to the grid wire is applied to the primary corona assembly to limit soiling of the primary corona wire.

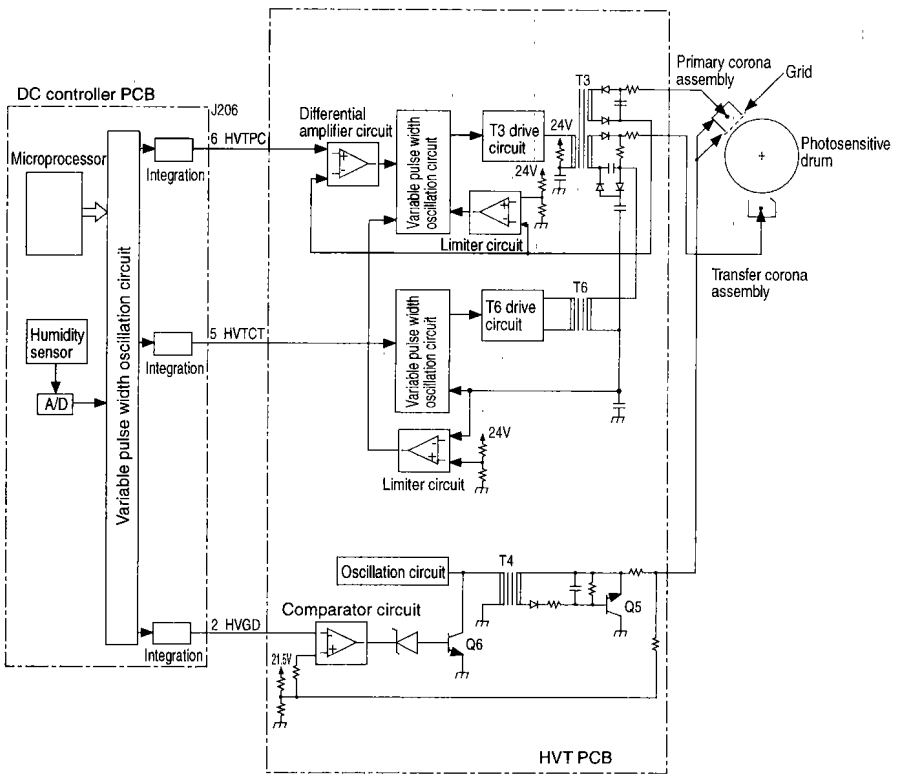

Figure 3-503

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2. Controlling the Primary Corona Current

The primary corona current is turned on and off by the primary corona level control signal (HVTPC).

The high-voltage transformer (T3) turns on when the HVTPC signal is 8 V or higher, thereby supplying high voltage to the primary corona assembly.

a. Primary Corona Current Output Is Off
HVTPC = less than 8 V
→ differential amplifier circuit turns off
→ variable with oscillator circuit turns off
→ T3 turns off

b. Primary Corona Current Output Is On
HVTPC = 8 V or higher
(constant at factory)
differential amplifier circuit turns on
→ variable width pulse oscillator circuit turns on
→ T3 turns on

At this time, a high voltage that suits the level of the HVTPC signal is sent to the primary corona assembly.

If too large a current flows from the primary corona assembly because of changes in the environment, the return signal to the differential amplifier circuit becomes high, thereby decreasing the corona current and ultimately controlling the current to a specific level.

3. Controlling the Transfer Corona Current

Changes in the environment (temperature, humidity) can greatly affect the efficiency of transfer, in which toner is moved from the photosensitive drum to copy paper.

The discharge current from the transfer corona assembly is maintained at a constant level because of this mechanism, and changes in the environment will not affect the reproduction of copy images with even density.

The static eliminating current is also controlled to ensure good transfer in the presence of changes in the environment. The transfer corona current is turned on and off by the transfer corona level control signal (HVTCT).

When the high-voltage transformer (T3) is on, the high-voltage transformer (T6) turns on, thereby adding the output of T6 to the output of T3 to provide the transfer corona assembly with high voltage; the transfer corona assembly will not be provided with power when T3 is off.

a. Transfer Corona Current Output Is Off
high-voltage transformer T3 is on
→ HVTCT = 16 V
→ T6 turns off

b. Transfer Corona Current Output Is On
high-voltage transformer T3 is on
→ HVTCT = less than 16 V
→ T6 turns on

If too great a current flows from the transfer corona assembly because of changes in the environment, the return signal to the variable width pulse generator increases, decreasing the output and the corona current from the transfer and ultimately controlling the current to a specific level.

If, for some reason, an overcurrent occurs on the output side of the high-voltage transformer used for primary/transfer charging, limit control is exerted so that the current will not exceed a specific level; see p. 3-70 for discussions.

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4. Limit Control

If an overcurrent flows in the primary or transfer corona assembly, the limiter circuit shown in Figure 3-504 turns on to reduce the output of both corona assemblies.

At the same time, if the condition is as shown in Table 3-501, the developing bias (AC component/DC component) is turned off to prevent toner from moving to the photosensitive drum.

Corona assembly	State	Developing bias	Copy image
Primary	Short circuit	remains on	black, horizontal band or solid black
	Arcing	turns off	white, horizontal spots or solid white
Transfer	Short circuit		
	Arcing		

Table 3-501

5. Controlling the Grid Bias

When the grid bias control signal (HVGD) is less than 16 V, the output of the comparator circuit stops and the transformer (T4) turns on to apply a bias.

HVGD signal is less than 16 V
→ comparator circuit turns off
→ T4 turns on
→ Q5 turns on
→ bias is applied

The output is returned to the comparator circuit so that the voltage applied to the grid remains constant.

The HVGD signal is of a factory-adjusted value, and the level of the HVGD signal when a bias is applied is a specific level.

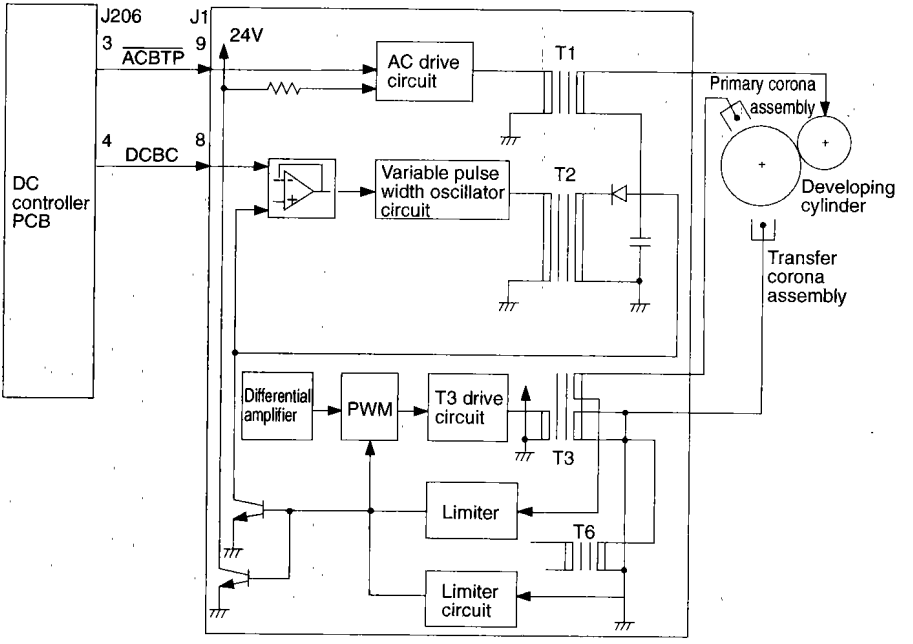

Figure 3-504

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D. Controlling the Developing Bias

1. Outline

Figure 3-505 shows the circuit that controls the developing bias, and the circuit has the following functions:

- turns on and off the AC component of the developing bias.
- turns on and off the DC component of the developing bias.
- controls the voltage level of the DC component of the developing bias.

The control mechanism is operated by the following two signals generated by the DC controller circuit:

- developing bias AC drive signal (ACBTP)
- developing bias DC level control signal (DCBC)

Reference:

AC component of developing bias: 800 Vpp 1800 Hz
DC component of developing bias: 580 V (approx., fixed)

2. Operation

① Turning on and off the AC Bias
ACBTP signal is '0'
→ AC drive circuit turns on
→ T1 turns on
The above condition applies an AC bias to the developing cylinder.

② Turning On and Off the DC Bias and Controlling the Level
• DCBC signal is 16 V or less
→ differential amplifier circuit turns on
→ variable pulse width oscillator circuit turns on
→ T2 turns on
The above condition supplies the developing cylinder with a DC bias that suits the level of DCBC; on the other hand, the bias is not supplied if DCBC is 16 V or more.

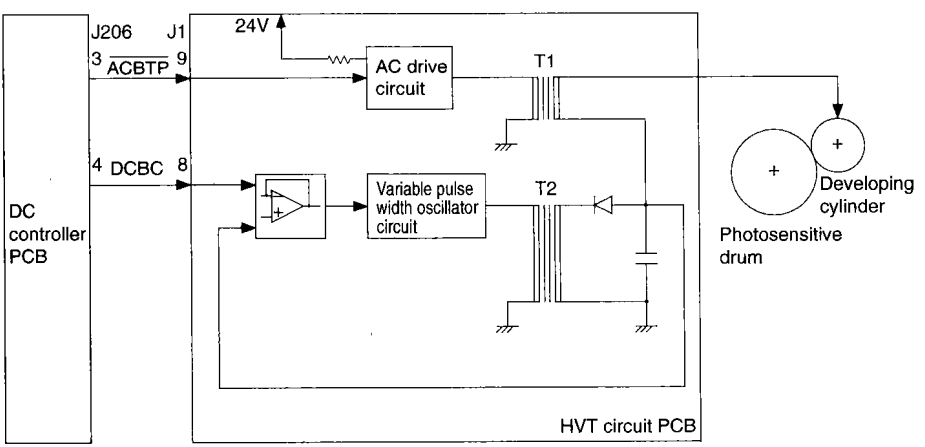

Figure 3-505

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E. Controlling the Separation Static Eliminator Current

1. Outline

Figure 3-506 shows the circuit that controls the DC current that flows to the separation static eliminator.

The separation static eliminator current is controlled to a specific level by returning the current from the secondary side of the transformer, thereby preventing separation faults caused by changes in the environment; at the same time, the current level is switched to suit the humidity inside the machine.

2. Operation

The separation static eliminator is turned on and off by the separation level control signal (HVSCT). The separation static eliminator is supplied with current when the HVSCT signal is 8 V or higher.

- HVSCT is 8 V or more
  - → variable width pulse oscillator circuit turns on
    - → T5 drive circuit turns on
      - → T5 turns on

The above condition supplies the separation static eliminator with a DC current that suits the level of the HVSCT signal.

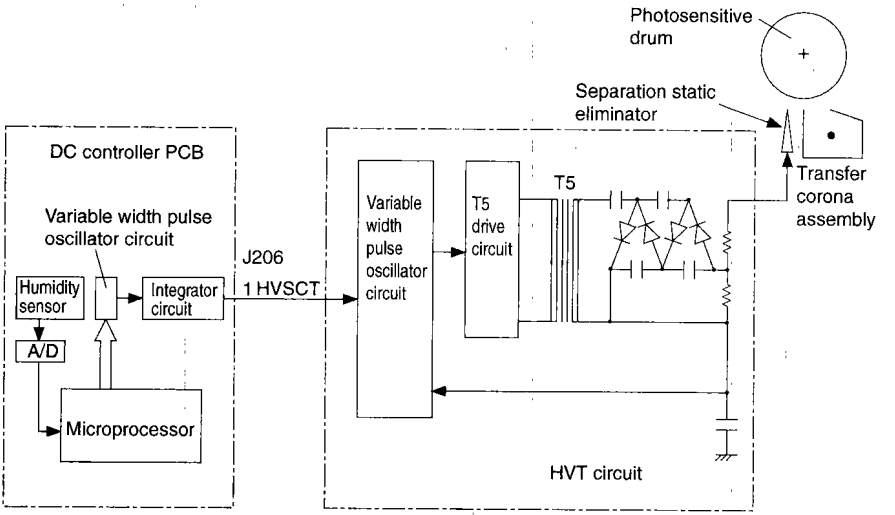

Figure 3-506

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F. Turning On and Off the Transfer Guide Bias

1. Outline

As shown in Figure 3-507, a negative voltage is applied to the GP30F's transfer guide to prevent adhesion of toner to the transfer guide.

A negative voltage is also applied to the metal core of the upper fixing roller to prevent offset of toner to the fixing roller.

2. Operation

transfer guide bias on signal (TGBON) is '0'
└►T1 turns on

The above condition applies a bias of -550 V to the transfer guide and a bias of -550 V to the upper fixing roller.

The timing at which these biases are applied are based on the timing at which the registration roller drive clutch turns on.

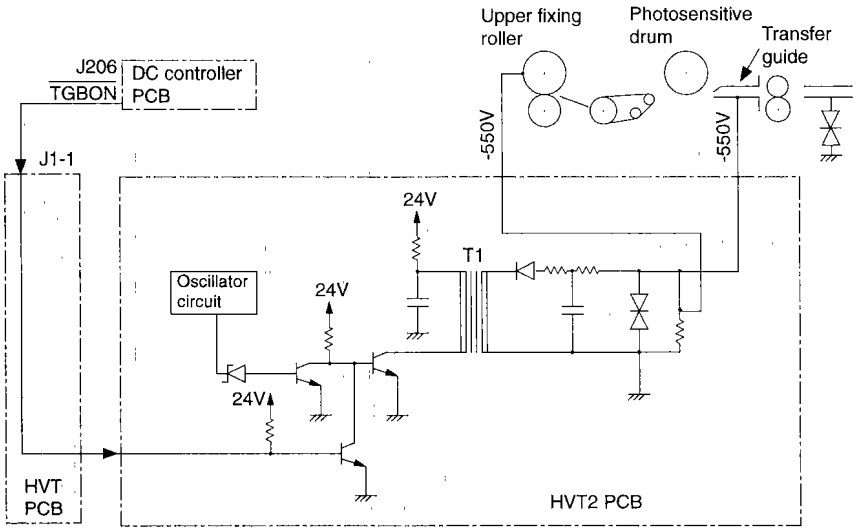

Figure 3-507

G. Developing Assembly/ Drum Cleaner

1. Outline

The developing assembly is driven by turning on and off the drive of the main motor to the developing assembly clutch (CL8).

The drum cleaner is part of the drum unit consisting of the photosensitive drum and the primary corona assembly. The waste toner feeding blade rotates by the drive of the main motor.

The developing assembly is locked or released in connection with the releasing mechanism of the feeding assembly.

The level of toner inside the developing assembly is monitored by the toner sensor (TS1).

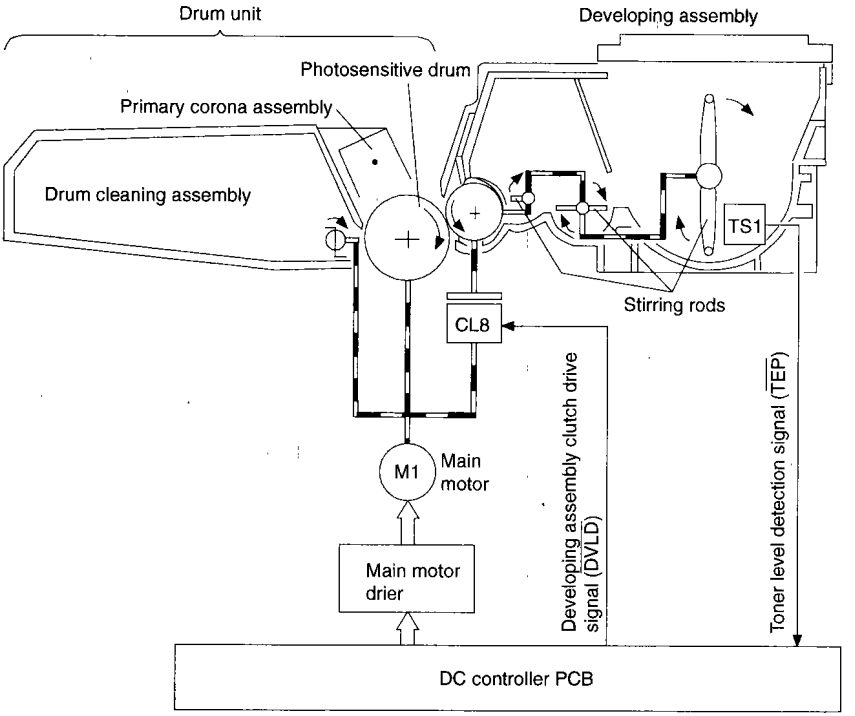

Figure 3-508

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2. Monitoring the Level of Toner

The toner sensor (TS1) inside the developing assembly is a piezoelectric oscillation type and serves to monitor the level of toner.

When the toner inside the developing assembly is at a specific level or more, the output of the toner sensor is '0'.

The microprocessor on the DC controller PCB reads in the output of the toner sensor while the main motor is on; when the toner sensor output=0 lasts 20 sec (communicative), the PCB identifies the absence of toner.

After identification of the absence of toner, the DC controller PCB stops copying operation and issues a message to the control panel as soon as 100 copies have been made.

The counter will be cleared when the rear main power switch is turned off while the toner absent signal is being monitored or the absence of toner is identified, returning the count to '0'.

Reference:

The detecting portion of the toner sensor used inside the developing assembly is a piezoelectric oscillation type that oscillates at several kHz in the absence of toner; when toner exists, on the other hand, the weight of the toner stops the oscillation of the oscillator. The sensor output occurring at each of these conditions is processed digitally.

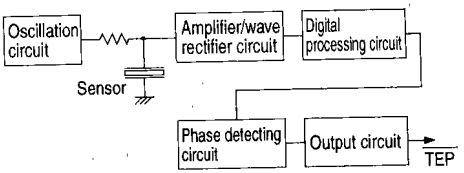
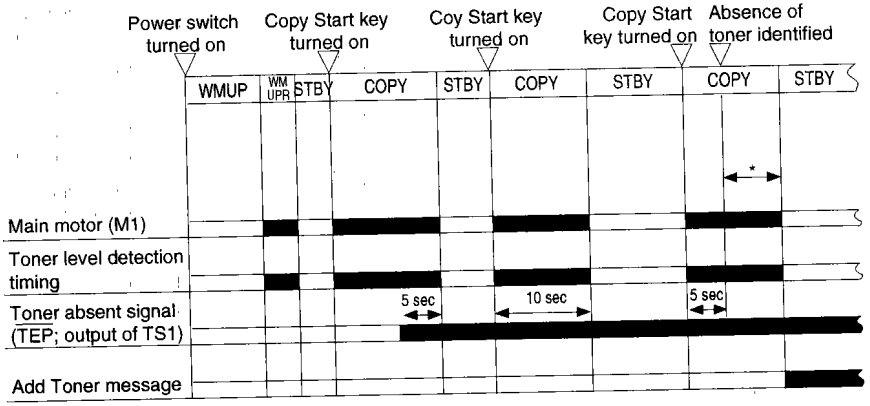


Figure 3-509



* Copies are counted during the period; copying is stopped and a message is displayed on the control panel at the 100th copy.

Figure 3-510

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H. Cleaning the Corona Wire

1. Outline

The GP30F is equipped with an automatic cleaning mechanism for the primary corona wire and the transfer corona wire.

The automatic cleaning mechanism cleans the corona wires under the following conditions:

① the temperature of the fixing assembly is 100°C or less when the power switch is turned on.
② corona wire cleaning is selected in user mode.
③ the cleaner is not at the home position when the power switch is turned on.
④ at the end of last rotation (LSTR) for every 2,000 copies; however, cleaning is executed every 2,000 copies after cleaning executed by condition 1, 2, or 3.
⑤ when the power is turned on after jam removal.

2. Cleaning the Corona Wire

The corona wire is cleaned by moving the corona wire cleaner forward and in reverse.

The corona wire cleaner is driven by the cleaning motor and is moved forward starting at the cleaner home position switch (SW1 for primary, SW7 for transfer).

When the corona wire cleaner reaches the corona wire cleaner reversal switch (SW6 for primary, SW8 for transfer), the corona wire cleaner is moved in reverse to the home position.

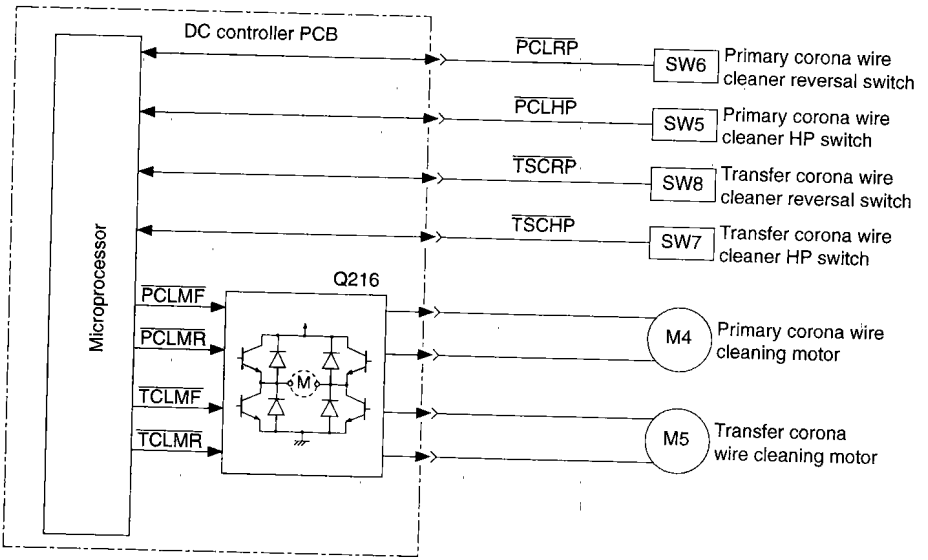

Figure 3-511

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3. Controlling the Corona Wire Cleaning Motor

The corona wire cleaning motor is controlled by the corona wire cleaner forward signal (PCLMF/TCLMF) and the corona wire cleaner reverse signal (PCLMR/TCLMR).

	$\overline{\text{PCLMF}}$ / $\overline{\text{TCLMF}}$	$\overline{\text{PCLMR}}$ / $\overline{\text{TCLMR}}$
Forward	0	1
Reverse	1	0
Stationary	1	1

Table 3-502

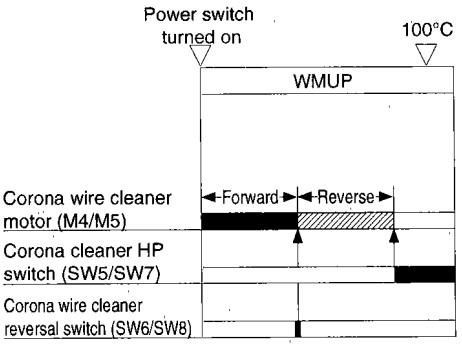

Figure 3-512

4. Detecting an Error in Corona Wire Cleaning

The microprocessor on the DC controller identifies an error if any of the following conditions exists for the forward/reverse time during corona wire cleaning operation:

a. SW 6 (SW8) does not detect the corona wire cleaner about 30 sec after the corona wire cleaner has been moved forward.

b. SW5 (SW7) does not detect the corona wire cleaner about 30 sec after the corona wire cleaner has been moved in reverse.

If any of these conditions occurs, the corona wire cleaning motor is stopped immediately and 'E060' (primary corona assembly) or 'E063' (transfer corona assembly) is indicated.

Caution:
Do not shift the feeding assembly releasing lever while the transfer corona wire cleaner motor is operating.

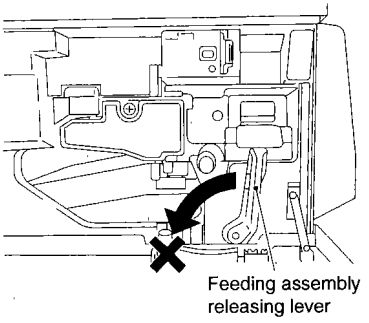

Figure 3-513

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VI. PICK-UP/FEEDING SYSTEM

A. Outline

The GP30F uses center reference, in which copy paper moves along the center of the pick-up/feeding path; its pick-up system consists of top and bottom cassettes and the multifeeder.

Copy paper from the cassette or the multifeeder is controlled by the registration roller so that it matches the image leading edge on the photosensitive drum; it is then moved to the copy tray through the transfer, separation/feeding, and fixing assembles.

As many as five sensors are provided to monitor the movement of copy paper; Table 3-601.

Sensor	Name
PS1	vertical path roller 2 sensor
PS4	vertical path roller 1 sensor
PS8	pre-registration roller paper sensor
PS10	delivery sensor
PS11	separation sensor

Table 3-601

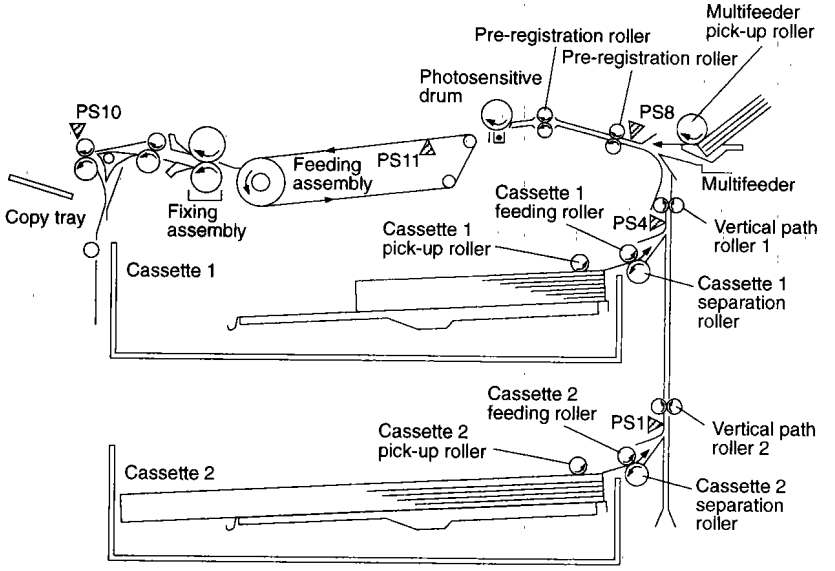

Figure 3-601

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B. Pick-Up from the Cassette

1. Pick-Up Operation

The copy paper inside the cassette is held up by the lifter so that it remains in contact with the pick-up roller.

When the pick-up clutch (CL1 or CL4) turns on, the pick-up roller rotates to pick-up copy paper; then, the pick-up roller releasing solenoid (SL1 or SL2) turns on, thereby moving the pick-up roller away from the paper.

A single sheet of copy paper is then moved forward to the feeding path by the feeding roller and the separation roller; then, the copy paper is moved to the registration roller by the work of the vertical path roller and the pre-registration roller.

The registration roller controls the copy paper so that its leading edge matches the image on the photosensitive drum; see p. 3-91.

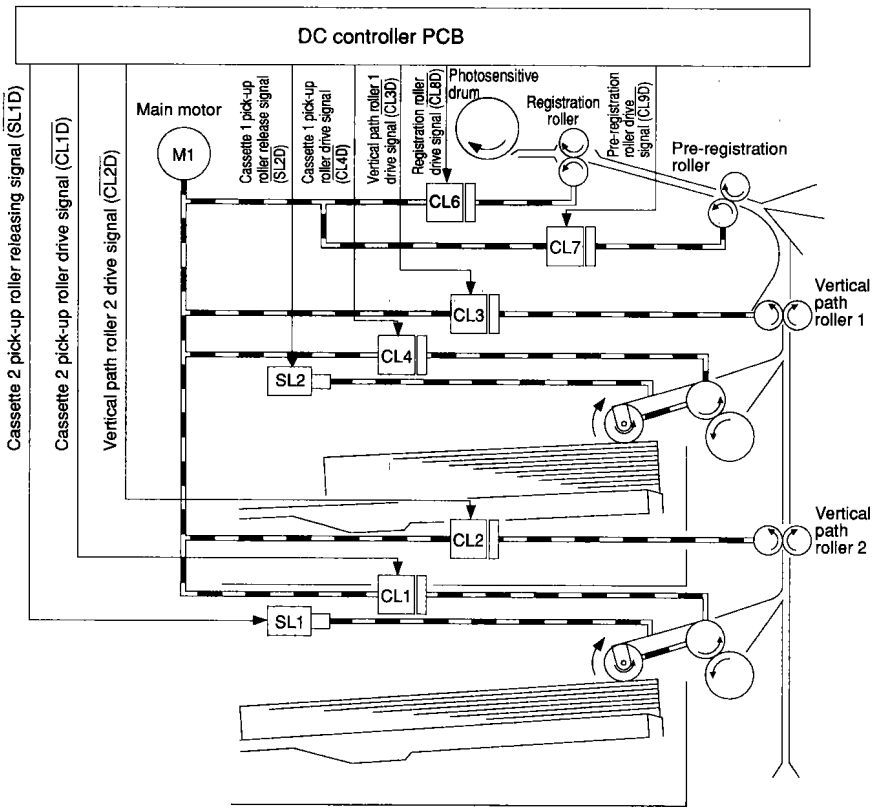

Figure 3-602

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2. Sequence of Operations (cassette 1, A4, 2 copies, continuous)

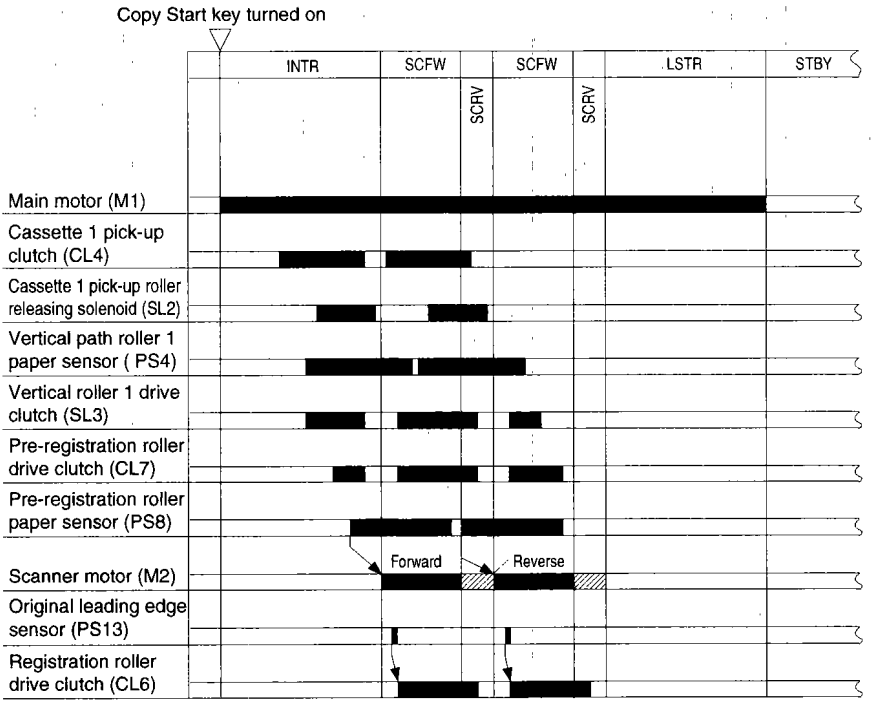

Figure 3-603

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C. Movement of the Cassette Lifter

When the cassette is pushed inside the copier, the pick-up roller lowers, causing the light-blocking plate to leave from the lifter position sensor (PS6A, PS3); this condition turns on the lifter motor (M6, M7) to move up the lifter. The lifter motor stops where the top surface of the stack of copy paper on the lifter may be detected by the lifter position sensor (PS6, PS3).

When the cassette runs out of copy paper, the paper detecting roll attached to the pick-up roller shaft drops; when the paper detecting lever moves away from the paper sensor (PS2, PS5) in connection with the dropping of the paper detection roll, the message 'Add Paper' appears on the control panel.

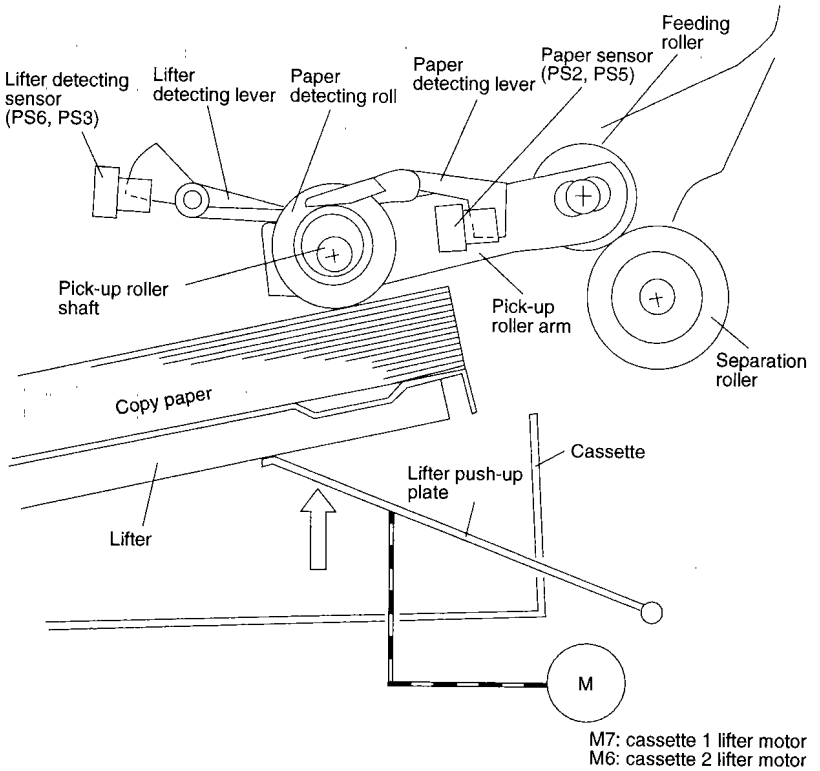

Figure 3-604 (cross section)

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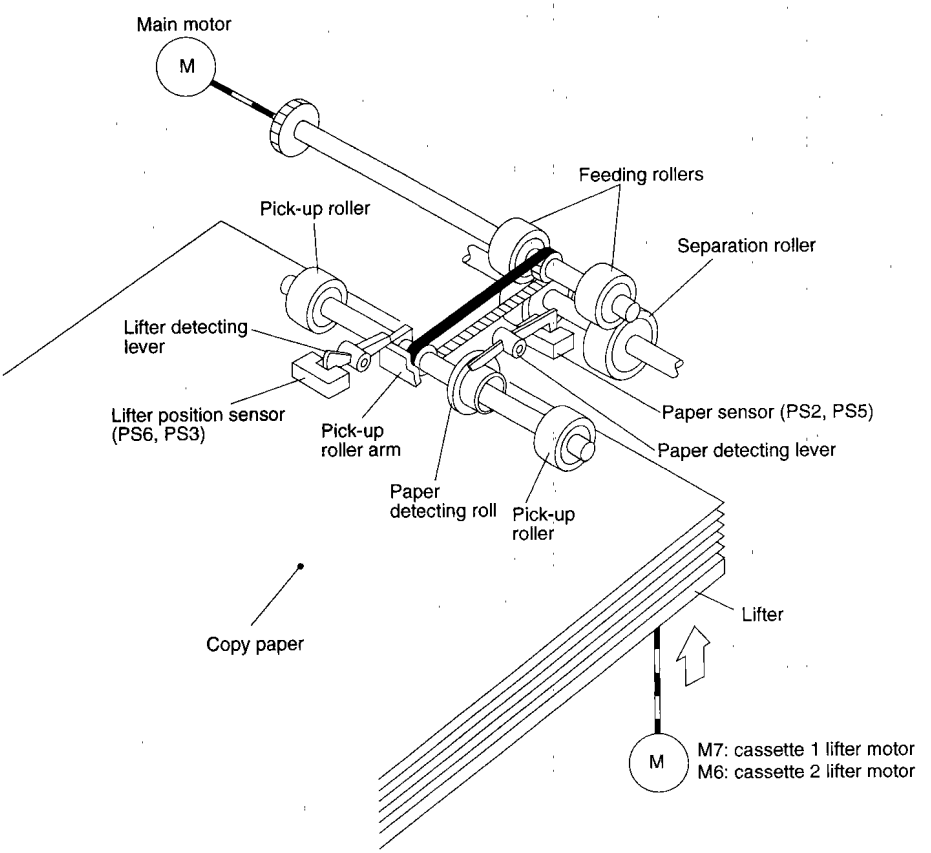

Figure 3-605

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D. Identifying Copy Paper Size

1 Outline

The size of the copy paper inside the cassette is identified by the paper size sensor attached to the rear of the cassette holder.

When a cassette is slid into the cassette holder, the paper size sensors are pushed by the bosses on the cassette and, as a result, the length and the width of the copy paper is identified. Based on the combination of the width and the length, the copier identifies the size of the copy paper and, at the same time, decides when to reverse the scanner and how to control the range of laser exposure.

The bosses that push the paper sizes operate in connection with the guide plate inside the cassette, and the bosses are arranged in a specific way when the guide plate is adjusted to the paper size; see Figure 3-607.

2. Identifying the Size of Copy Paper

The copy paper length sensor consists of two photointerrupters, and the length of paper is identified based on the combination of the outputs of these sensors.

The copy paper width sensor, on the other hand, is a variable resistor that identifies the width of paper based on the output resistance.

Figure 3-606 shows the relationship between the paper width and the output of the variable resistor; the relationship is stored in the RAM on the image processor PCB.

For this reason, you will have to store the basic settings whenever you have replaced the image processor PCB; see p. 3-175 for how to store the paper width basic settings.

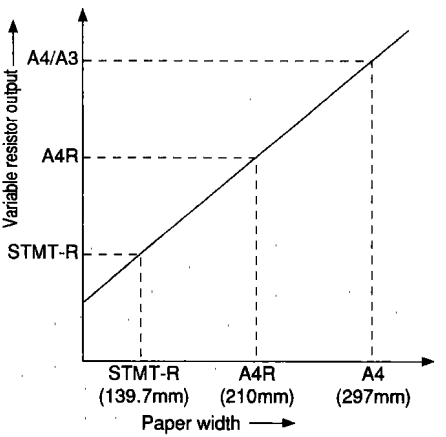

Figure 3-606

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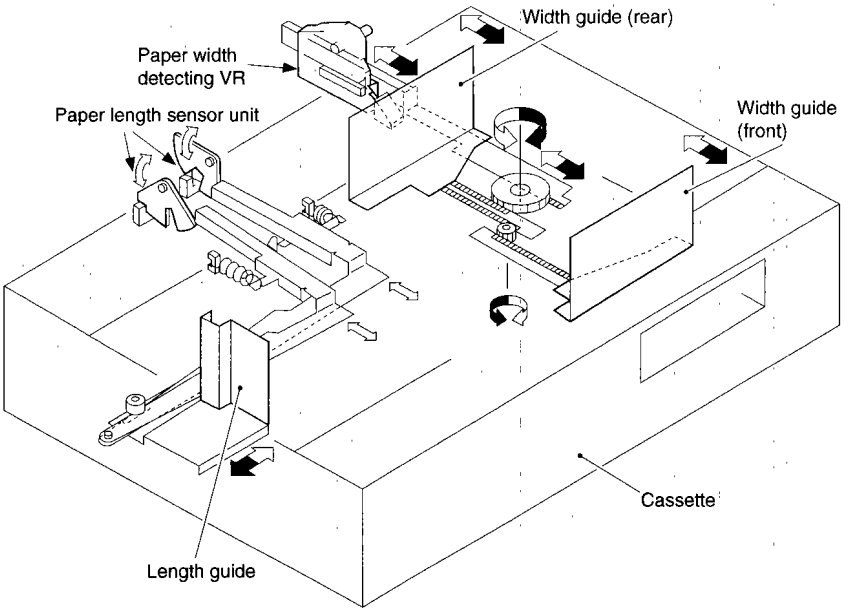

Figure 3-607

3. Markings on the Width Guide Rail

The width guide rail inside the cassette has paper size positioning hole; as shown in Table 3-602, each hole carries a marking A through M.

The markings will help identifying whether the size of the copy paper used and the width guide match; take advantage of this when the user mentions skew movements. (This information is not disclosed to the user.)

Marking	Paper name	Remarks
A	STMT-R	
B	A5-R	
C	B5-R	
D	KLGL-R	
E	GLTR-R	
F	G-LGL	G3
G	A4-R	
H	LGL/LTR-R	
I	FLSC	G2
J	B4/B5	
K	G-LTR	G1
L	11" ×17" /LTR	G5
M	A3/A4	

Table 3-602

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4. Paper Size

The microprocessor on the DC controller PCB identifies the size of copy paper based on the paper length input.

Each group of paper sizes shown in Table 3-604 may be stored in service mode. (The asterisk * indicates the size stored at the factory.)

Paper length sensor	SW102	SW101	SW102	SW101	SW102	SW101	SW102	SW101
Paper width sensor Slice level (in mm) / Signal name	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1
ON/OFF	0	0	0	1	1	0	1	1
288.5	A4		—		A3		—	
273.7	(G5)		—		11"X17"		—	
261.8	(G1)		—		—		—	
238.0	B5		—		B4		—	
212.9	STMT		LTRR		LGL		(G2)	
206.6	A5		A4R		—		(G3)	
196.6	G-LTRR		—		—			
186.0	K-LGLR		—		—		—	
165.2	B5R		—		—		—	
144.1	A5R		—		—		—	
	STMTR		—		—		—	

Table 3-603

Group		Size
G1	*	G-LTR
		K-LGL
G2	*	FOOLSCAP
		OFFICIO
		E-OFFI
		A-LGL
		A-OFFI
G3	*	G-LGL
		FOLIO
		AUS-FLS
G5	*	LTR
		A-LTR

Table 3-604

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a. List of Effective Paper Sizes

Paper	Notation	Size (lengthXwidth in mm)
A3	A3	(297±1)X(420±1)
A4R	A4R	(210±1)X(297±1)
A4	A4	(297±1)X(210±1)
A5	A5	(210±1)X(148.5±1)
A5R	A5R	(148.5±1)X(210±1)
B4	B4	(257±1)X(364±1)
B5R	B5R	(182±1)X(257±1)
B5	B5	(257±1)X(182±1)
11"X17"	11X17	(279±1)X(432±1)
LETTER-R	LTRR	(216±1)X(297±1)
LETTER	LTR	(297±1)X(216±1)
STATEMENT	STMT	(216±1)X(139.5±1)
STATEMENT R	STMTR	(139.5±1)X(216±1)
LEGAL	LGL	(216±1)X(356±1)

Paper	Notation	Size (lengthXwidth in mm)
Korean Goverment	K-LGL	(265±1)X(190±1)
Korean Goverment-R	K-LGLR	(190±1)X(265±1)
Foolscap	FLSC	(216±1)X(330±1)
Australian Foolscap	A-FLS	(206±1)X(337±1)
Officio	OFI	(216±1)X(317±1)
Ecuadorian Officio	E-OFI	(220±1)X(320±1)
Bolivian Officio	B-OFI	(216±1)X(355±1)
Argentine Letter	A-LTR	(280±1)X(220±1)
Argentine Letter	A-LTRR	(220±1)X(280±1)
Government Letter-R	G-LTR	(267±1)X(203±1)
Government Letter-R	G-LTRR	(203±1)X(267±1)
Argentine Legal	A-LGL	(220±1)X(340±1)
Government Legal	G-LGL	(203±1)X(330±1)
Folio	FOLI	(216±1)X(317±1)
Argentine Officio	A-OFI	(220±1)X(340±1)

Table 3-605

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5. Storing the Paper Width Basic Settings

Go through the steps that follow whenever you have

- replaced the paper width detecting VR (including the multifeeder) of the copier or the cassette feeding unit.
- adjusted the left/right registration.

1) Finish replacing the paper width detecting VR .
2) Open the front door, and insert the door switch actuator tool into the door switch assembly.
3) Push the service mode switch with a hex key.
4) Press the ⊛ key.
5) Press '∗4∗FUCNTION' on the screen to highlight the item.
6) Press OK.
7) Press the ▶ key to select the Paper Width Basic Settings Store screen (5th, 6th screen).

∗4∗ FUNCTION 5		
C1-STMTR	=	AD =
C1-A4R	=	
C2-STMTR	=	AD =
C2-A4R	=	
MF-A6R	=	AD =
MF-A4R	=	
MF-A4	=	

Figure 3-608

8) Press to highlight the item representing the cassette you want to store the basic setting.
   - AD: output value of paper width detecting VR.
   - C1–C5: cassettes 1 through 5 (C1 being the topmost)
   - MF: multifeeder.
   - STMTR: paper width guide adjusted to STMT-R.
   - A4R: paper width guide plate adjusted to A4R.
   - A6R: paper width guide adjusted to A4R.
   - A6R: paper width guide plate adjusted to A6R.
   - A4: paper width guide plate adjusted to A4.
9) Slide out the cassette for which you want to store the basic setting, and adjust the paper width guide plate inside the cassette to suit 'STMTR-R' according to the instructions on the screen.
10) Slide in the cassette.
11) Check the AD value on the control screen.
12) Press OK to store the AD value for the item 'STMTR'.
13) Slide out the cassette, and set the paper width guide plate to A4R; then, slide in the cassette.
14) Check the AD value for A4R appearing on the screen.
15) Press 'A4R' to highlight; then, press OK to store the AD value to the item 'A4R'.

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16) Turn off and on the rear main power switch.
You need not go through the steps after replacing these image processor PCB; enter the setting recorded on the service label in service mode (*3*).

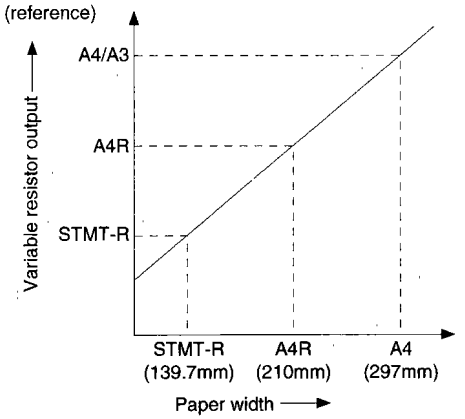

Figure 3-609

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E. Multifeeder

1. Outline

The multifeeder is a mechanism that picks up copy paper from its tray and that is capable of picking up sheets of copy paper continuously.

The copy paper placed on the tray is butted against the pick-up roller by the paper guide plate; then, the drive of the main motor is transmitted to the pick-up roller through a clutch to rotate the roller.

A single sheet of copy paper is fed to the registration roller by the work of the pick-up roller and the separation roller.

This series of operations is executed for each pick-up.

The paper width guide plate of the multifeeder tray is equipped with a variable resistor (Figure 3-612), and is used to identify the width of paper when the guide plate is brought in contact with the edge of the paper. Based on the data, paper sizes of the same paper width are grouped and displayed on the control panel for selection to enable the auto paper select mechanism.

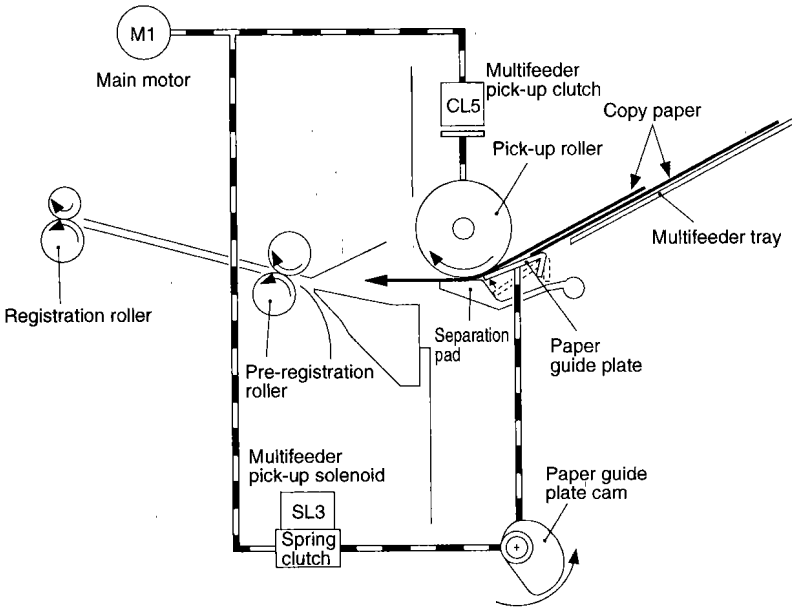

Figure 3-610

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2. Sequence of Operations (multifeeder)

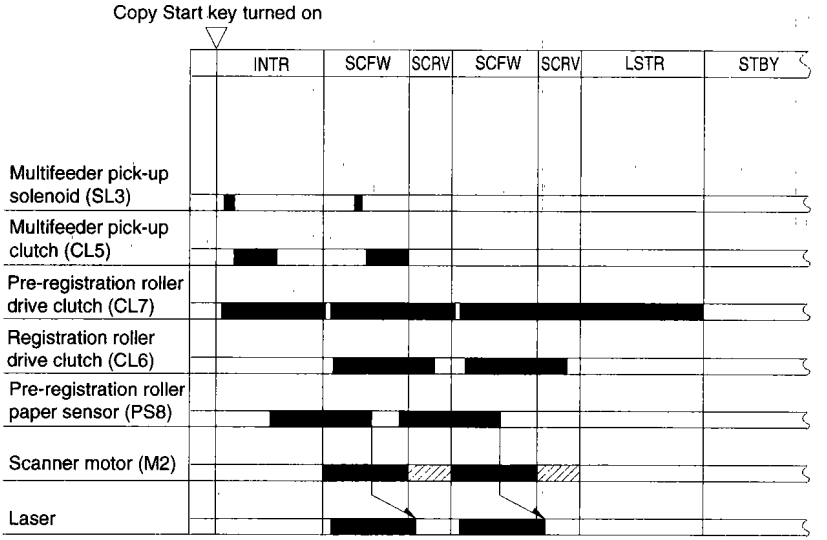

Figure 3-611

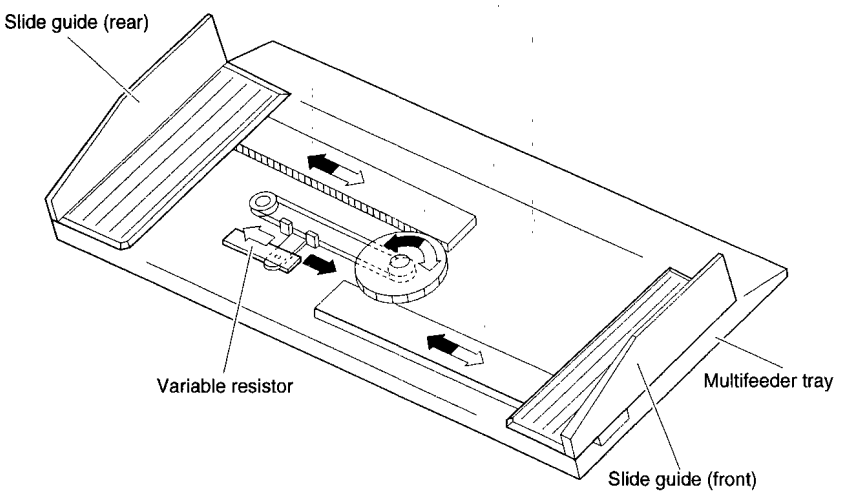

Figure 3-612

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F. Controlling the Registration Clutch

The registration clutch controls copy paper so that the copy paper and the image on the drum match.

The timing at which the registration clutch turns on may be varied in service mode.

In the case of modes other than binding mode, the registration clutch is controlled so that the leading edge of the copy paper and the leading edge of the image on the drum match.

In binding mode, control illustrated in Figure 3-613 is exerted to create a binding margin on the copy paper.

Selected mode		Copy paper timing	Shift (mm)	Copy paper on copy tray
one-sided original to one-sided copy		B	May be varied between 0 and 20 mm; the illustrations assume that a shift is set to 5 mm.	
one-sided original to two-sided copy	1st side	A		
	2nd side	B		
two-sided original to two-sided copy	1st side	A		
	2nd side	B		
two-sided original to one-sided copy	1st side	B		
	2nd side	B		
page separation (one-sided copy)	1st side (left)	B		
	2nd side (right)	B		
page separation to two-sided copy	1st side (left)	A		
	2nd side (right)	B		
one-sided original to overlay copy	1st side	B		
	2nd side	B		
two-sided original to overlay copy	1st side	B		
	2nd side	B		
page separation to overlay copypage separation to overlay copy	1st side (left)	B		
	2nd side (right)	B		

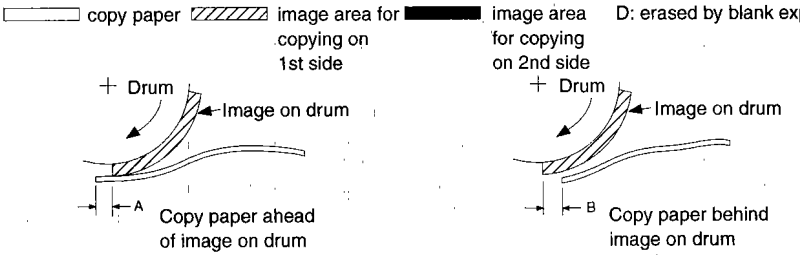

Figure 3-613

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G. Fixing/Delivery Assembly

1. Outline

The fixing roller and the delivery roller of the delivery assembly are driven by the main motor (M1).

The cleaning belt is taken up by the drive of the cleaning belt solenoid (SL5); the area over which the belt remains in contact with the upper fixing roller is designed fairly large for improved cleaning efficiency.

The cleaning belt drive solenoid (SL5) is designed to turn on as soon as copy paper reaches the separation sensor (PS11), and the number of its activations is dependent on the length of copy paper (Table 3-606).

Copy paper length	Activation of cleaning belt drive solenoid
less than 257 mm	once
257 mm or longer	twice

Table 3-606

Note:
In the case of manual copying mode, the cleaning belt drive solenoid is turned on twice regardless of the length of copy paper.
The DC controller PCB keeps track of the number of times the solenoid has turned on; and, when it counts 250,000, it issues the message 'Replace Cleaning Belt' on the control panel during copying operation only. Advise the user to make a service call when this message appears; you may check and clear the counter in service mode.

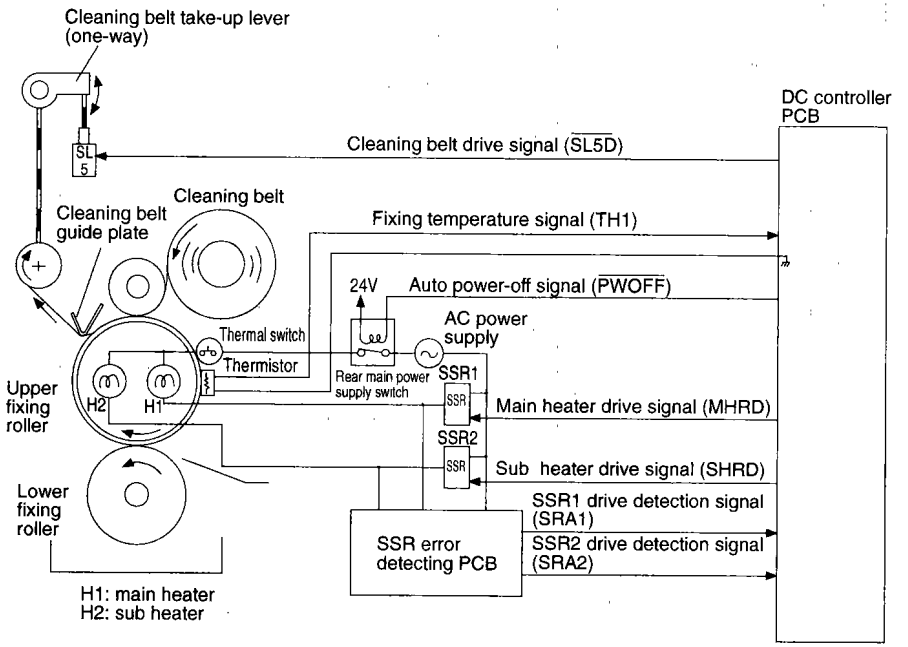

Figure 3-614

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2. Controlling the Fixing Roller Temperature Distribution

The upper fixing roller is heated by two heaters: main heater (H1) and sub heater (H2).

The main heater and the sub heater are separate heaters with different heat distribution so that they can control the range of heating on the upper fixing roller to suit the width of copy paper.

The surface temperature of the upper fixing roller is checked by a thermistor.

① Heat Distribution of Main Heater (H1)

② Heat Distribution of Sub Heater (H2)

③ Outside View of Upper Fixing Roller

④ The graph represents the distribution of the surface temperature of the upper fixing roller when only the main heater (H1) is turned on; i.e., control when LGL (215.9 mm or less) is used.

⑤ The graph represents the distribution of the surface temperature of the upper fixing roller when both main heater (H1) and the sub heater (H2) are turned on; i.e., control when paper 215.9 mm or greater is used.

⑥ Width of Copy Paper

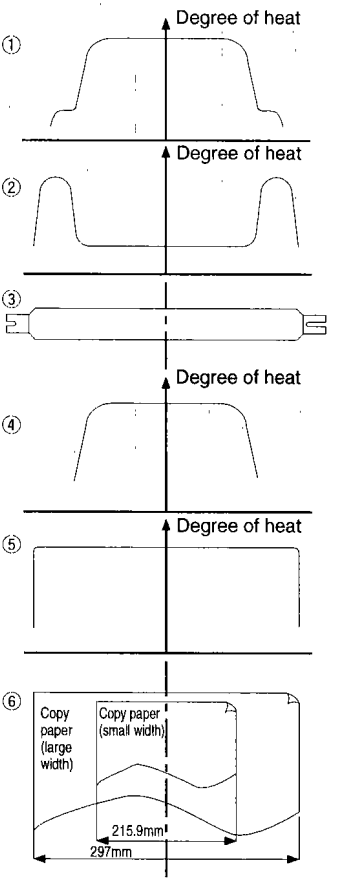

Figure 3-615

3. Protective Mechanisms

The GP30F is equipped with three types of protective mechanisms used to prevent malfunction of the fixing heaters:

- the microprocessor monitors the voltage of the thermistor and issues an error code in response to an error (E000, E001, E002, E003, E004).
- The thermal switch turns off to cut out the supply to the fixing heater if the inside temperature of the thermal switch exceeds 200°C.
- If the fixing heater remains on because of a short circuit in the SSR or the fixing temperature rises abnormally, the error auto power-off generated by the DC controller PCB forces off the rear main power switch to cut out the supply power to the fixing heater.

Caution:

Once open, the contact of the thermal switch (TSW2) will not return to normal unless the inside temperature is lowered to 0°C or less and brought back to ambient temperature.
You must use the specified thermal switch (FH7-7294) whenever you are replacing the thermal switch.

The SSR error detecting circuit consists of SSR1 used for driving the main heater and SSR used to drive the sub heater; however, SSR1 and SSR2 are identical, and only one circuit is shown in the outline diagram given in Figure 3-617.

The SSR error detection PCB sends the SSR drive detection signal (SRA=1) to the SSR error identification circuit of the DC controller when the SSR turns on.

The SSR error identification circuit monitors both the SRA signal and the heater drive signal (HRD) at the same time, and it generates the auto power-off signal ($\overline{\text{PWOFF}}$) with reference to the signal combinations shown in Table 3-607.

Heater	SSR	SRA signal	HRD signal	$\overline{\text{PWOFF}}$ signal
Off	OFF	0	0	Output absent
On	ON	1	1	Output absent
On	Shorted	1	0	Output present

Table 3-607

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If the fixing temperature detected by the thermistor (TH1) rises to about 230°C, 'E001' is indicated on the control panel and copying operation is stopped.

If, for some reason, the fixing temperature exceeds about 230°C (thermistor signal 0.68 V or less), the error auto power-off signal is generated to force off the rear main power switch.

If the error auto power-off signal is generated, you can reset the copier by removing the cause and turning on the power switch.

If 'E000' is displayed, however, you must execute 'ERROR' in service mode ＊4＊ to reset the copier.

Reference:

The rear main power switch also turns off if the mode is activated in response to 'auto power-off' set in user mode.
To distinguish these two types of activation, this manual refers to the setting made in user mode as auto power-off, and the activation in which the rear main power switch is turned off in response to the activation of a protective mechanism as error auto power-off.

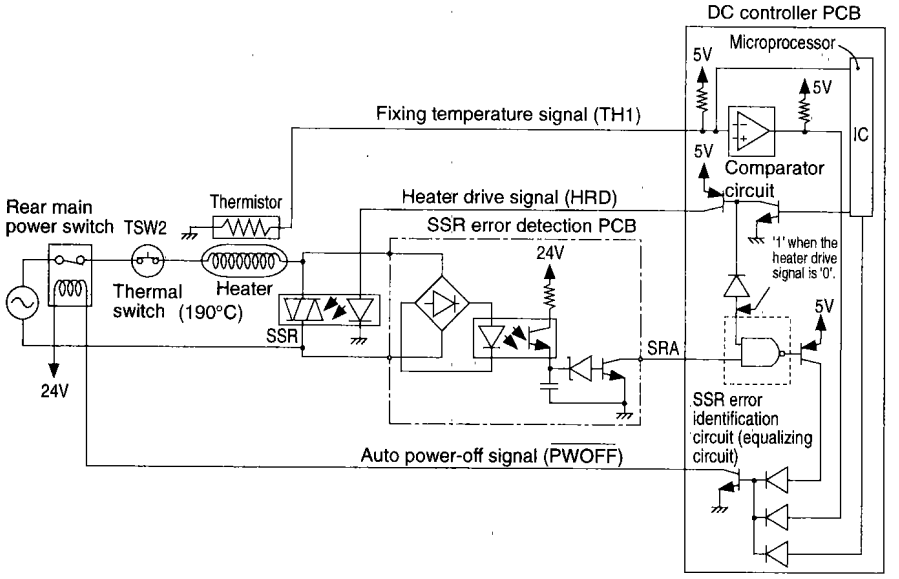

Figure 3-616

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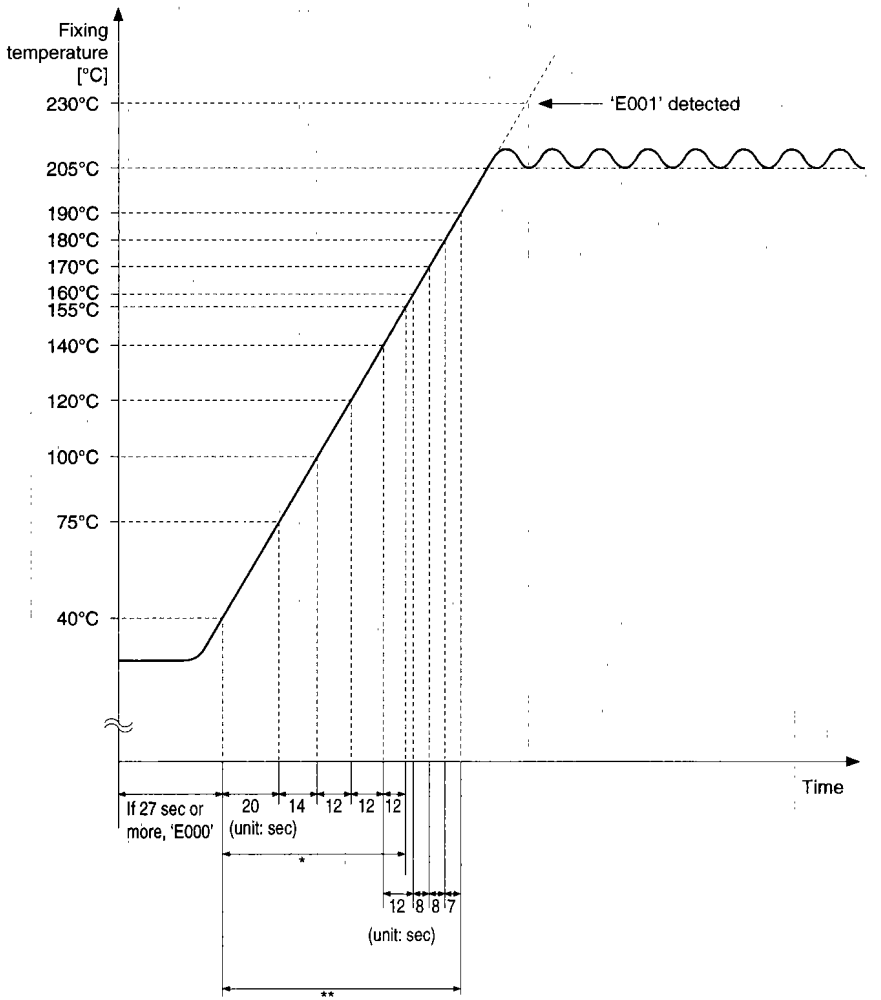
■ E000, E0001, and E002 Timing



* E002 for high-temperature mode; see next page.
** E002 for low-temperature mode; see next page.

Figure 3-617

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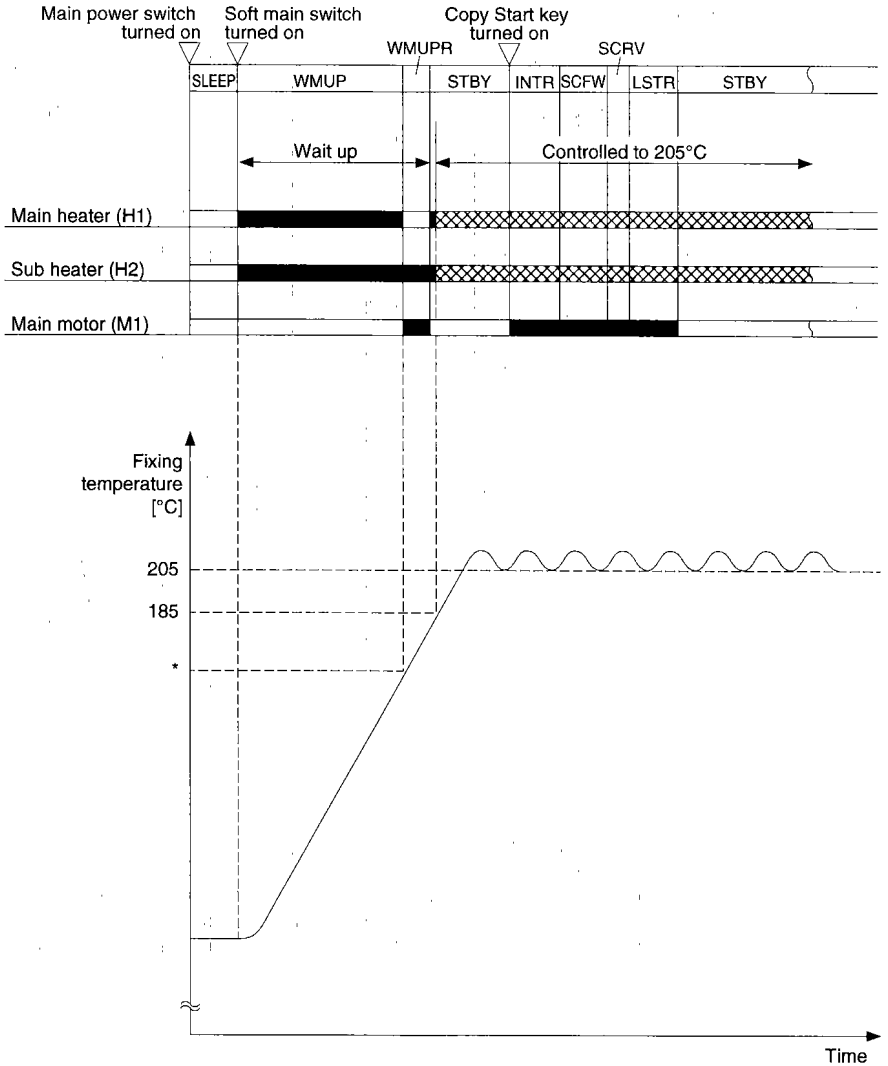
4. Sequence of Operations (fixing temperature)



* The start timing of the warm-up rotation and the period of rotation depend on the rises in temperature of the fixing roller (to 150°C) and are controlled by switching the mode as follows automatically; these modes may be controlled under '*5*SPOL-PPR' in service mode:

① high-temperature mode: about 30 sec is spent for wait-up.
② medium-temperature mode: about 40 sec is spent on wait-up.
③ low-temperature mode: about 60 sec is spent on wait-up.
④ ultra low-temperature mode: about 90 sec is spent on wait-up.

Figure 3-618

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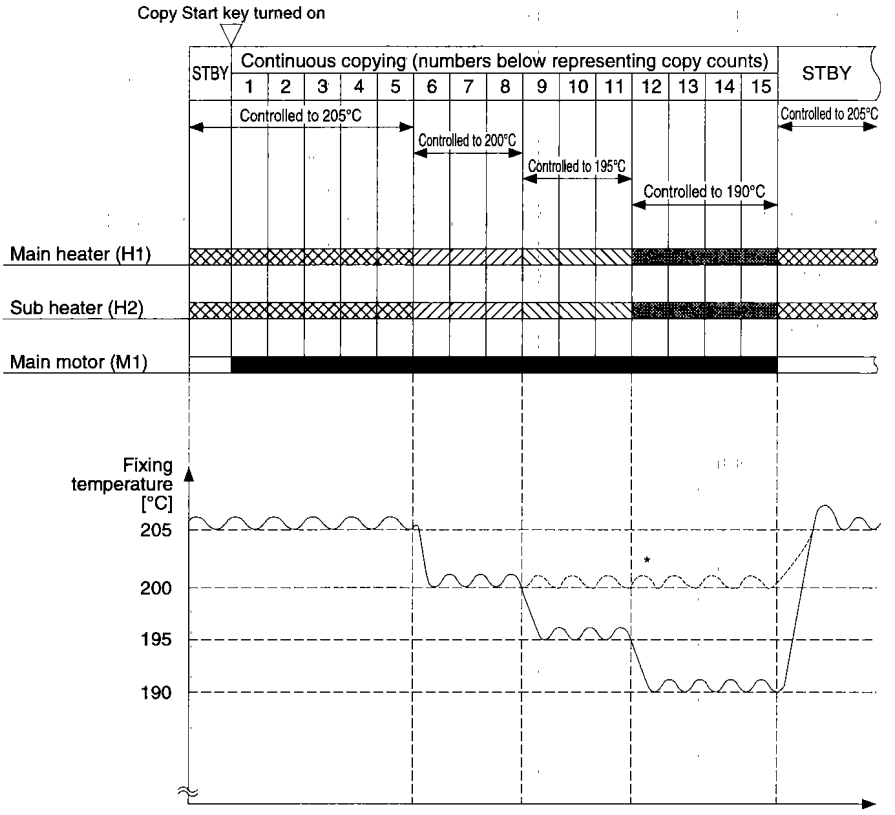
■ Sequence of Operations (fixing temperature; continuous copying)



* Setting 'SPCL-PPR' to '2' in service mode ✱5✱ selects 200°C even for continuous copying.
For this reason, fixing improves for thick paper, but some types of paper may become subject to curling, leading poor stacking in the sorter.
In view of this, set 'SPCL-PPR' to other then '0' in service mode ✱5✱ if a sorter is installed.

Figure 3-619

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5. Fixing Roller Bias

A negative DC bias (-550V) is applied to the steel core of the upper fixing roller during copying operation.

This bias to the fixing roller serves to limit the toner offset to the fixing roller.

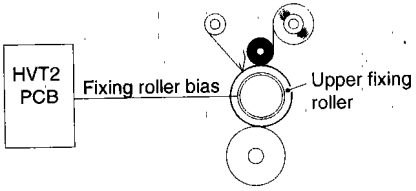

Figure 3-620

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H. Detecting Jams

The following sensors are provided to check the presence/absence of copy paper and to make sure that the copy paper, if any, is moving properly:

- vertical path roller 1 paper sensor (PS4)
- vertical path roller 2 paper sensor (PS1)
- pre-registration roller paper sensor (PS8)
- separation sensor (PS11)
- delivery sensor (PS10)

The presence/absence of paper is checked in relation to the presence/absence of paper at the respective sensors at such times as instructed by the program stored on the microprocessor on the DC controller PCB.

The GP30F is equipped with a function to remember how many copies remain to be copied and the effective copy mode at the time of a jam so that the user need not reset the copy count after opening/closing the copier for jam removal.

In addition, the microprocessor identifies a jam if any of the sensors detects copy paper at power-on; further, it also identifies a jam when the front door, delivery door, or the right door is open or the cassette is slid out during copying operation.

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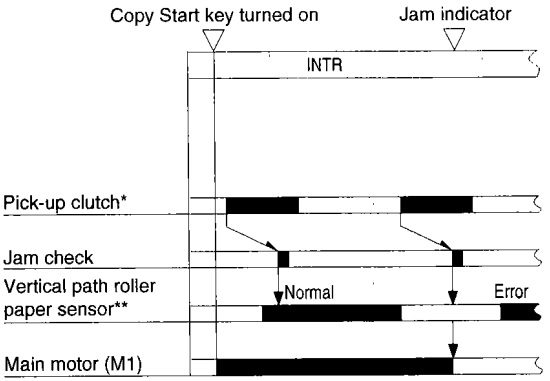
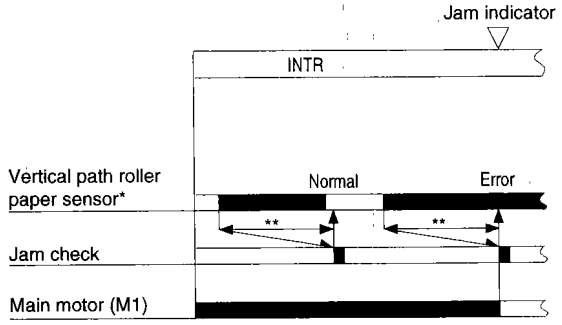
① Pick-Up Delay Jam



* If the pick-up is from cassette 1, the cassette 1 pick-up clutch (CL4).
If the pick-up is from cassette 2, the cassette 2 pick-up clutch (CL2).
If the pick-up is from the multifeeder, the multifeeder pick-up clutch (CL5).
** If the pick-up is from cassette 1, the vertical path roller 1 paper sensor (PS4).
If the pick-up is from cassette 2, the vertical path roller 2 paper sensor (PS1)
If the pick-up is from the multifeeder, the pre-registration roller paper sensor (PS8).

Figure 3-621

② Pick-Up Stationary Jam



* If the pick-up is from cassette 1, the vertical path roller 1 paper sensor (PS4).
If the pick-up is from cassette 2, the vertical path roller 2 paper sensor (PS1).
If the pick-up is from the multifeeder, the pre-registration roller paper sensor (PS8).
** Varies depending on the length of paper.

Figure 3-622

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③ Separation Sensor Delay Jam

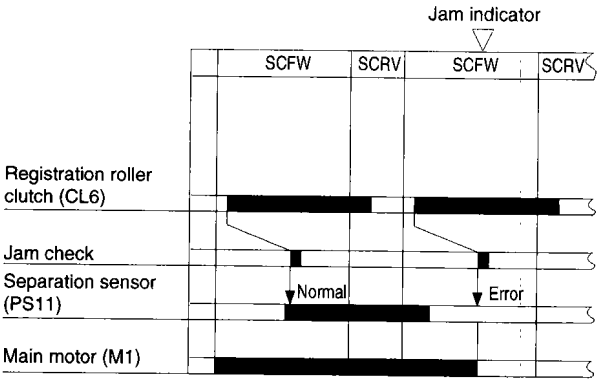
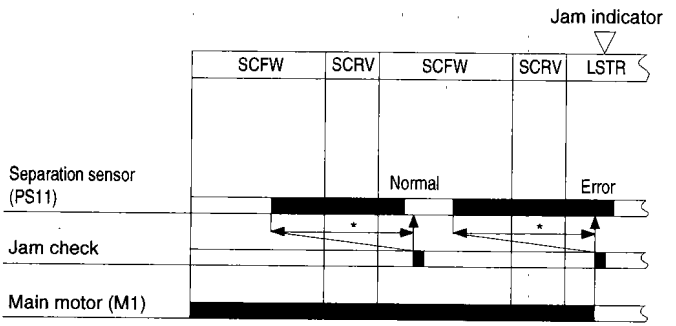


Figure 3-623

④ Separation Sensor Stationary Jam



* Varies depending on the length of paper.

Figure 3-624

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⑤ Delivery Sensor Delay Jam

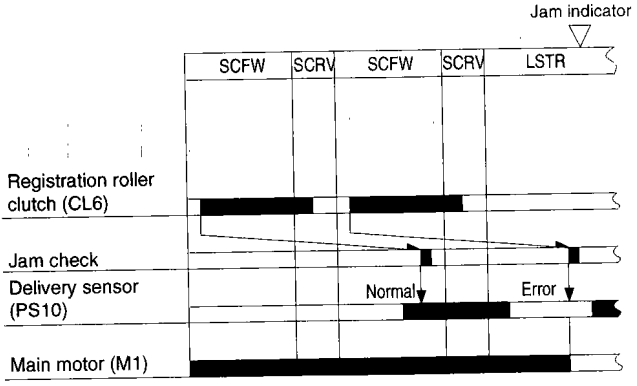
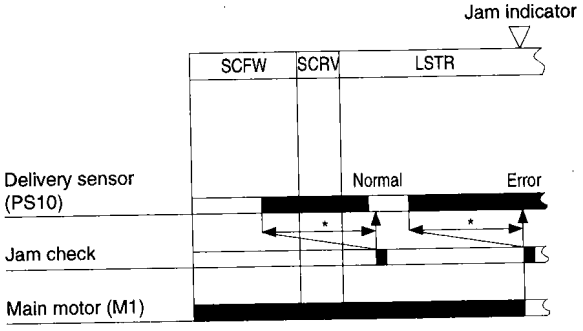


Figure 3-625

⑥ Delivery Sensor Stationary Jam



* Varies depending on the length of paper.

Figure 3-626

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VII. FANS

A. Functions and Operations

1. Outline

The GP30F is equipped with five fans for cooling the machine and exhausting ozone. See Table 3-701 for the function of each fan, the direction of the fan, and the filter used; Figure 3-702 shows the timing at which each fan turns on.

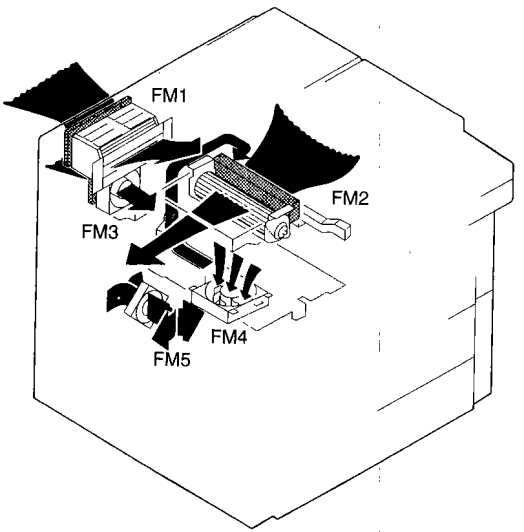

Figure 3-701

Fan	Name	Direction	Filter	Function	De-activation
FM1	Scanner cooling fan	Blowing	Air	Cools the scanner.	No
FM2	Exhaust fan	Drawing	Ozone	Draws ozone generated by the primary/transfer corona assembly. Exhausts heat.	Yes
FM3	Laser cooling fan	Blowing	Air	Cools the laser element.	Yes
FM4	Feeding fan	Drawing	Ozone	Keeps copy paper in contact with the feeding belt.	No
FM5	Power supply cooling fan	Blowing	Air	Cools the power supply PCB.	Yes

Table 3-701

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2. Sequence of Operations (fans)

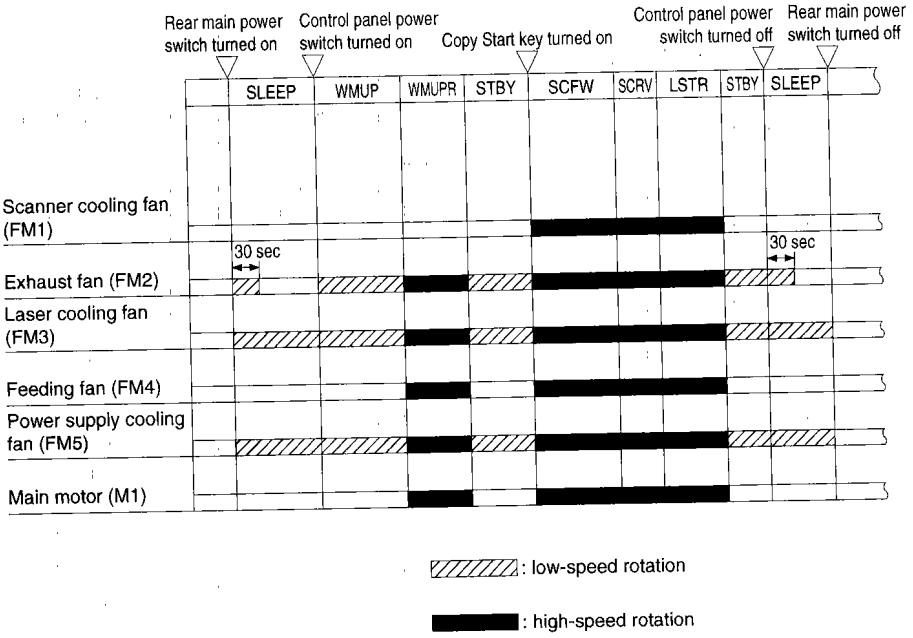

Figure 3-702

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B. Detecting the De-Activation of the Fans

1. Outline

Of the fans used, the following three keep turning while the machine is on to prevent overheating; for this reason, these three fans are equipped with a built-in sensor to detect de-activation:

- exhaust fan (FM2)
- laser cooling fan (FM3)
- power supply cooling fan (FM5)

If any of the fans is identified as having stopped turning, copying operation is suspended immediately, and an error code is indicated on the control panel.

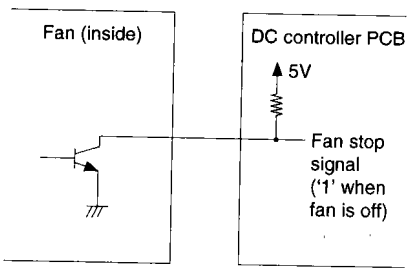

Figure 3-703 (conceptual diagram)

2. Detecting the De-Activation of the Heat Exhaust Fan

The heat exhaust fan is identified as having stopped because of an error when the fan stop signal has been generated five times.

At this time, 'E805' is indicated on the control panel. If this is the case, remove the cause, and turn off and on the power.

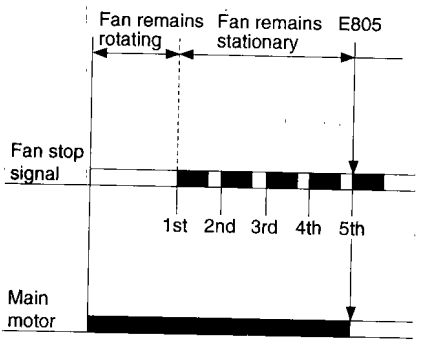

Figure 3-704

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3. Detecting the De-Activation of the Laser Cooling Fan

The laser cooling fan is identified as having stopped because of an error when the fan stop signal has been generated five times.

At this time, 'E121' is indicated on the control panel.

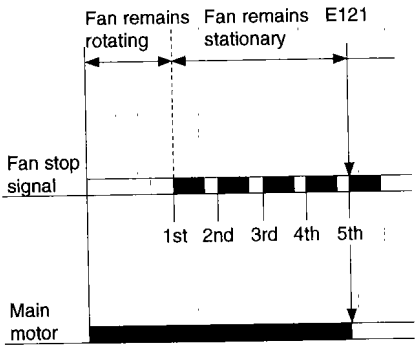

Figure 3-705

4. Detecting the De-Activation of the Power Supply Cooling Fan

The power supply cooling fan is identified as having stopped when the fan stop signal has remained on for 5 sec.

At this time, 'E804' is indicated on the control panel.

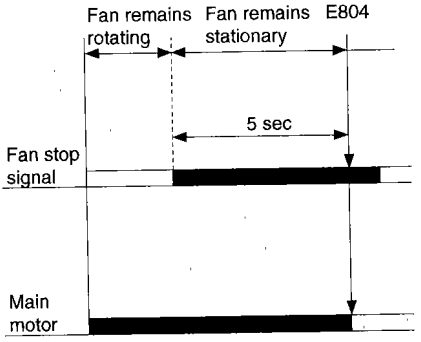

Figure 3-706

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VIII. POWER SUPPLY

A. Outline of Power Distribution (1/2)

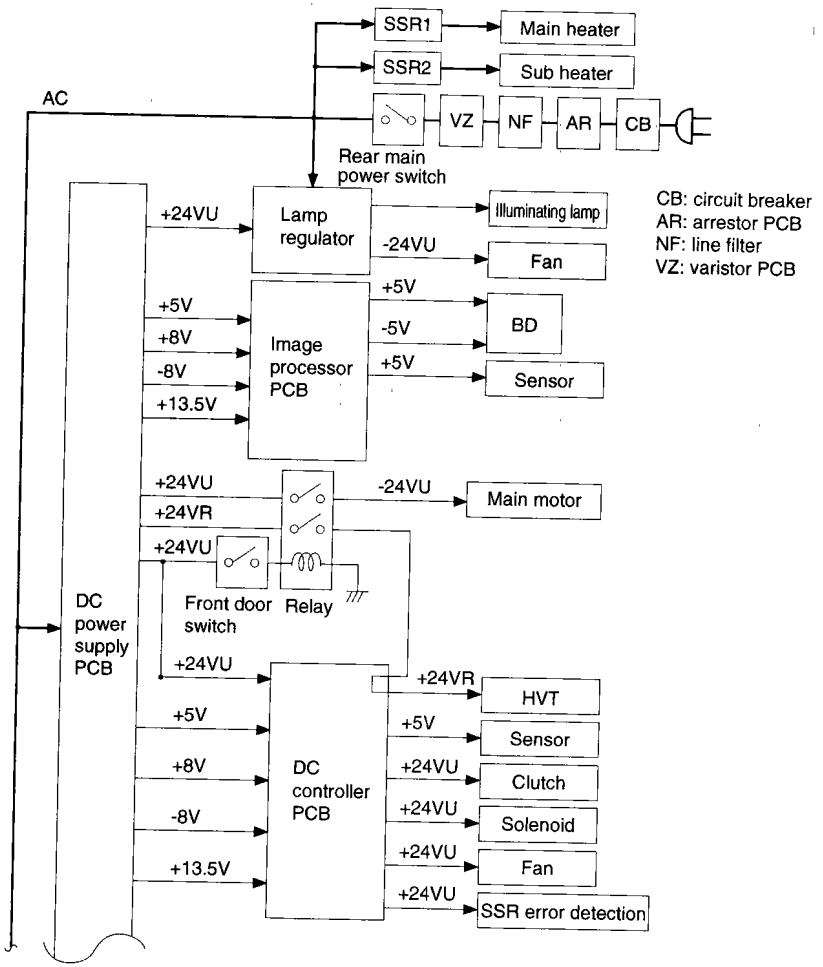

Figure 3-801a

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Outline of Power Distribution (2/2)

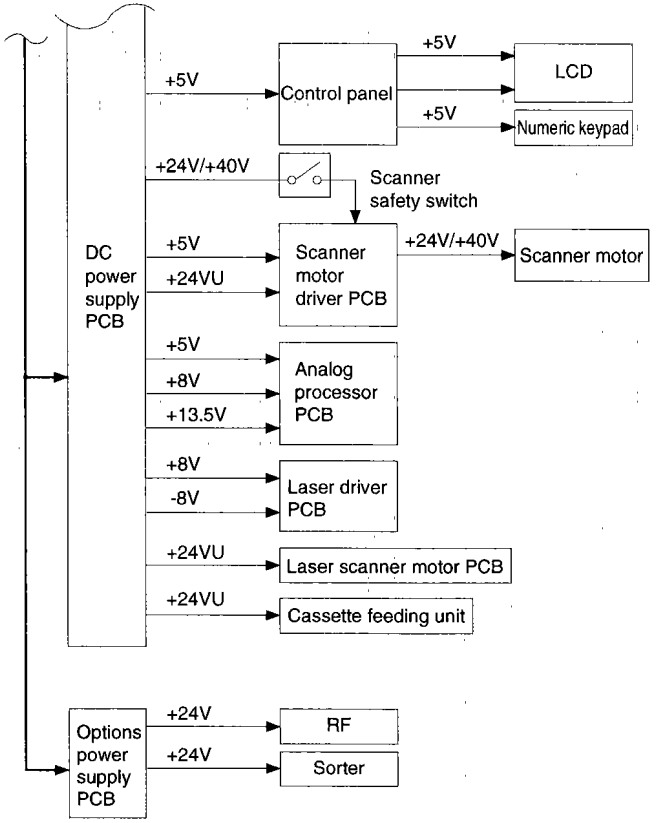

Figure 3-801b

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B. Power Switch

The GP30F is equipped with three power switches: rear main power switch (SW1), front door switch (SW2) and the control panel power switch; use these switches to turn on and off the machine.

Figure 3-802 is a conceptual diagram depicting the parts around these three switches; see Table 3-801 for the functions of the switches:

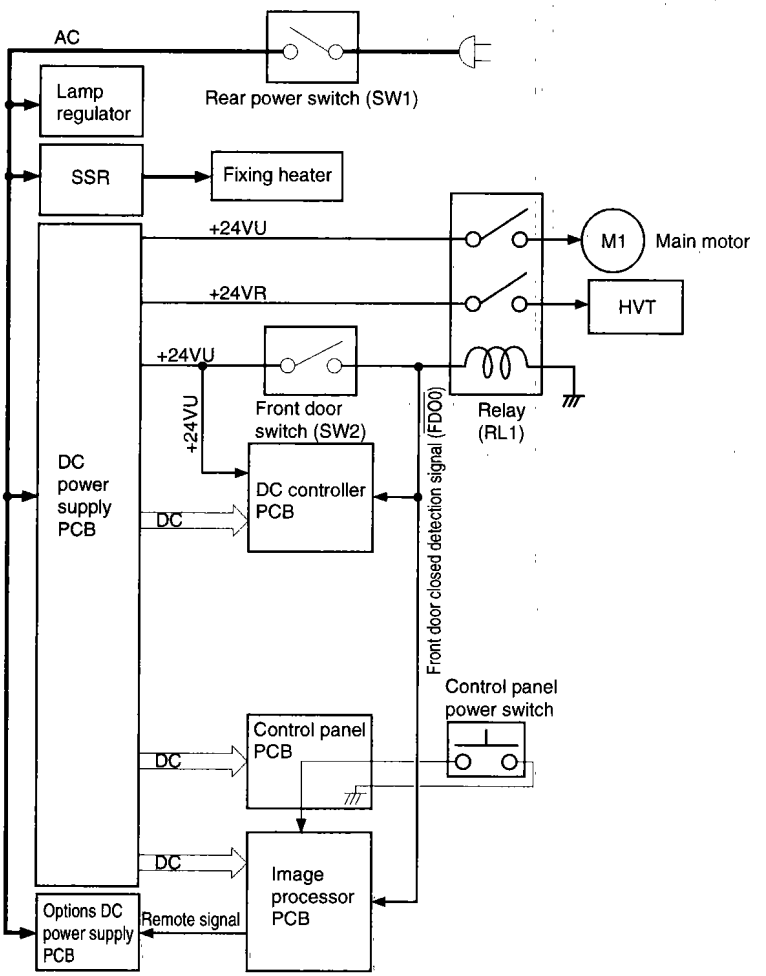

Figure 3-802 (conceptual diagram)

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Switch	Description	loads
Rear main power switch (SW1)	The switch controls the AC input to the DC power supply PCB and the like.	all loads
Front door switch (SW1)	The switch operates in connection with the relay RL1. The front door switch (SW2) turns off (open) and the relay RL1 also turns off (open) when the front door is opened, thereby cutting off the DC power to the main motor and the HVT.	main motor HVT
Control panel power switch	The switch turns off its respective loads by the work of software. The relevant functions turn on automatically if a fax message comes in while the switch is off with the MDC connected and the FAX Board installed; and the loads turn off automatically after completing a series of operations.	fixing heater control panel laser scanner motor

Table 3-801

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C. Power Supply Circuit

The GP30F's DC power supply PCB has as many as seven power channels: 40Vu, 24Vu, 24VR, 13.5VR, 5VR, +8V, and -8V.

The AC power input to the DC power supply PCB is turned on when the rear power switch is turned on.

The DC power supply for the RF/sorter is generated by the options DC power supply PCB and supplies each with +24V.

As mentioned earlier, opening the front door will not cut off the AC input; the options DC power supply PCB is turned off when the front door is opened by means of a remote signal generated by the image processor PCB in response to the front door open detection signal (FDOO).

D. Protection Mechanisms for the Power Supply Circuit

The DC power supply PCB and the DC power supply PCB for the DF/sorter are equipped with an overcurrent detection circuit; the protective mechanisms turn on in response to a short circuit caused by an error in the loads to stop the output.

If the output stops, you may reset the machine by turning off the rear main power switch, correcting the load, and turning on the switch once again; note, however, that repeated short circuiting and resetting can blow the internal fuses.

Caution:

Replace the lithium battery only with the one listed in the Parts Catalog. Use of a different battery may present a risk of fire or explosion. The battery may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, or dispose of it in fire. Keep the battery out of reach of children and discard any used battery promptly.

PCB	Battery	Data retained	Remarks
Image processor PCB	Lithium battery (3V)	• parameters (service mode, etc.) Retains data in the image processor RAM on the following when the FAX Board is installed to the MDC: • telephone directory • one-touch dialing numbers • abbreviated numbers	
Fax PCB	Lithium battery (3V)	• parameters (service software switches, etc.)	
	Lithium battery (3V; 2 pcs.)	• fax transmission/reception images	• secondary battery • charged when the main power supply switch is on

Table 3-802

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IX. CONTROL PANEL

A. Outline

Figure 3-901 shows the construction of the control panel.

The control panel is controlled by the CPU (master) on the image processor PCB. Since no memory (RAM) is used for the control panel, the telephone numbers are stored in the memory (RAM) on the image processor PCB if the Mult : Device Controller is connected and the FAX Board is installed.

The characters appearing on the LCD are drawn from the character font memory on the image processor PCB.

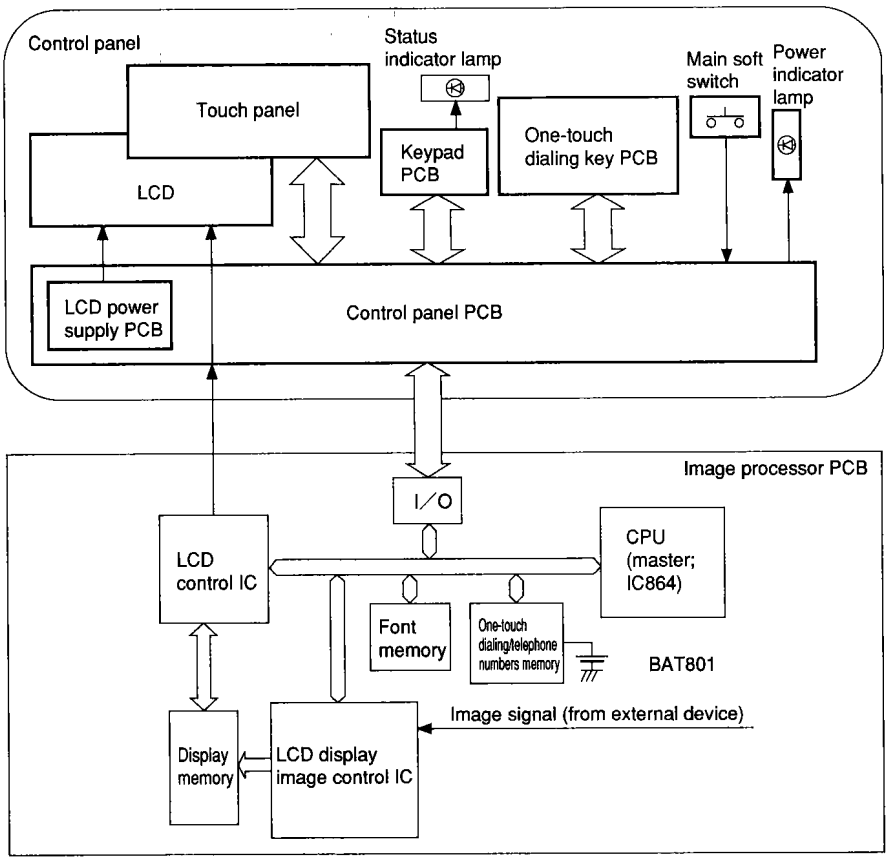

Figure 3-901

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B. LCD

1. Outline

The LCD is a unit possessing as many as 640x200 dots, displaying keys and messages needed for the operation of the machine.

In addition, the LCD is capable of displaying fax images that will be sent or that have been received.

2. Operation

The LCD is controlled by the LCD control IC on the image processor PCB.

The LCD control IC interprets the commands coming from the CPU to set up the applicable keys or messages.

The LCD control IC writes character codes for display into memory; the data written this way is sent to the LCD as timed with the signals generated by the LCD IC.

The signals for transmission/reception images from external devices are put in the LCD image control IC and stored in display memory after skipping some image data units.

The image data in the memory is then transferred to the LCD for display.

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X. SERVICE MODE

A. Outline

The copier's service mode is divided into the following:

Notation	Description
*1*DISPLAY	Control Display Mode • Displays the values controlled by the CPU, descriptions of control, and the version of the ROM.
*2*I/O DISPLAY	I/O Display Mode • Displays the input/output signals of the CPU.
*3*ADJUST	Adjustment Mode • Displays the items adjusted in service mode; you may set/change the items on the screen.
*4*FUNCTION	Operation/Inspection Mode • Displays the items used to operate the machine or execute functions that may be executed automatically; you may use the screen to operate/execute the appropriate functions.
*5*OPTION	Machine Specification Settings Mode • Displays items that may be used to change the specification of the machine for servicing or by the user; you may use the screen to set/change the appropriate settings on the screen.
*6*COUNTER	Counter Mode • Displays the number of times the machine has operated.
FAX	Fax Service Mode (Valid with the MDC connected and with the FAX Board installed) • Displays the items that may be set or executed in fax mode; you may set/change the appropriate settings on the screen.
LIPS	Printer Board (LIPS) Service Mode (Valid with the MDC connected and with the Printer Board installed)
FILE	File Board Service Mode (Valid with the MDC connected and with the File Board installed)

Table 3-1000

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B. Using Service Mode

1. Activating Service Mode

1) Open the front door, and insert the door switch actuator. (If you are making checks under 'I/O display mode', set the appropriate copy mode.)
2) Push the service mode switch with a hex key.
   • The machine enters service mode and indicates '$' in the upper left-hand corner of the message display.

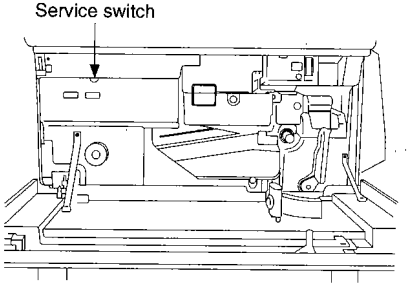

Figure 3-1001

3) Press the ⊛ key.
   • The display changes to the Service Mode Menu (initial) screen. (See Figure 3-1002.)
4) Select the appropriate service mode, and press the item.
   • The item will become highlighted.
5) Press the OK key to bring out the 1st screen of the selected service mode.

2. Moving through the Screens

a. Moving Ahead
   • Press the ▶ key to move to the next screen.
b. Moving Back
   • Press the ◀ key to move to the previous screen.
   • Press the ↺ key to return to the Service Mode Menu screen.

3. Executing an Item

1) Press the item you want to execute.
2) If you need to enter a value, use the numeric keypad.
3) Press the OK key.
   • The copier stores the setting or executes an item.

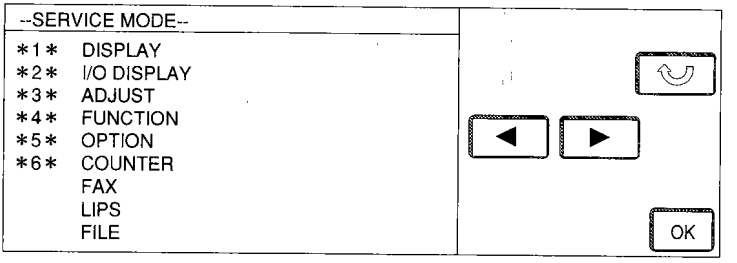

Figure 3-1002

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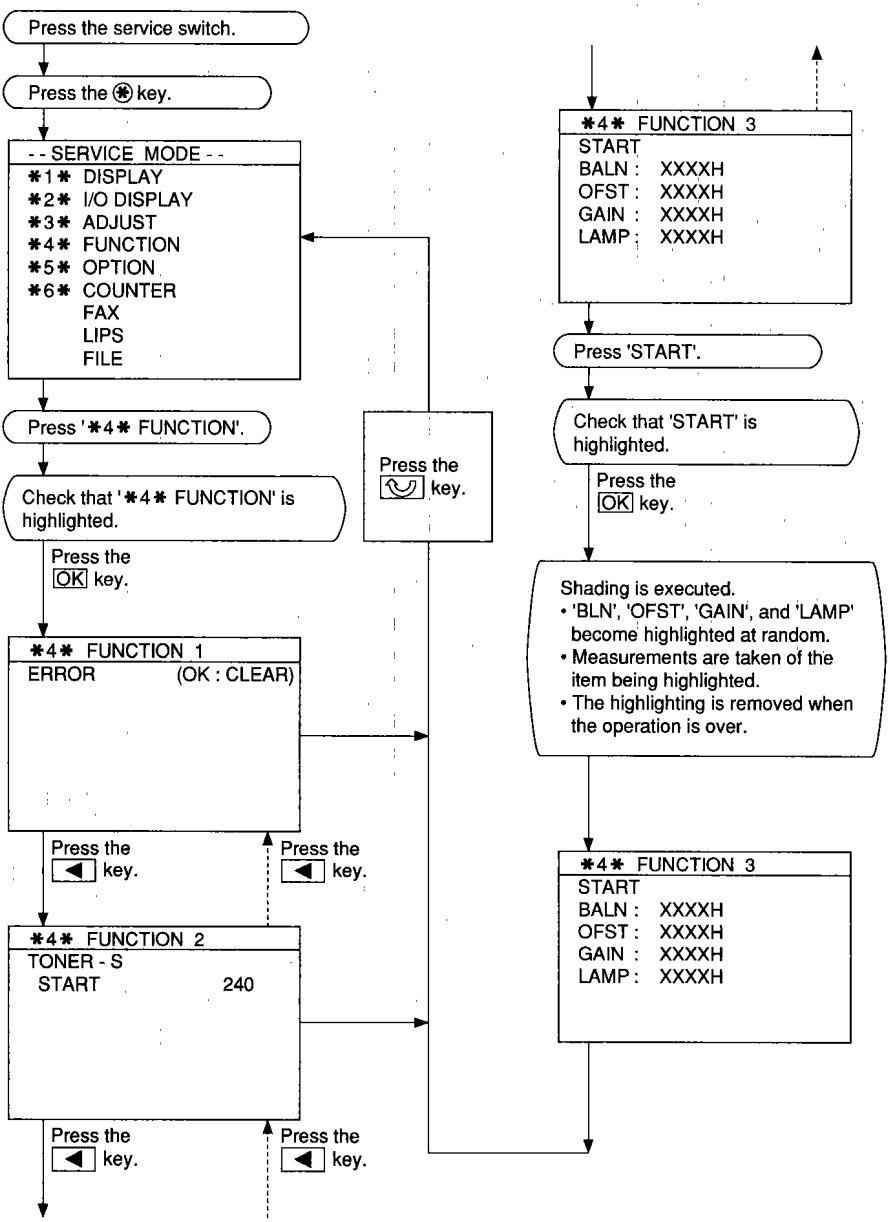
4. Service Mode



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C. Using Adjustment Mode and Specifications Settings Mode

Adjustment mode and specifications settings mode are used to simulate the operations initiated by the conventional variable resistors and switches by storing the settings selected on the control panel in the RAM on the image processor PCB. You must turn off and then on the power switch and check the changes after operation whenever you have changed the settings in either of the modes.

Figure 3-1003 is an illustration of the Service Label attached behind the front door.

At the factory, each machine is adjusted, and its adjustment values are recorded on the Service Label.

Whenever you have replaced the image processor PCB or initialized the RAM, you must enter the values recorded on the Service Label, since the image processor PCBs shipped from the factory are set to standard values.

Further, be sure to record any values you have entered in the field.

You need not enter any values if you have replaced the ROM; simply check the values.

	TYP		
C1-STMTR			
C1-A4R			
C2-STMTR			
C2-A4R			
MF-A6R			
MF-A4R			
MF-A4			
C3-STMTR			
C3-A4R			
C4-STMTR			
C4-A4R			
C5-STMTR			
C5-A4R			
PRIMARY			
GRID			
BIASBLINK			
BIAS			
TRN-1M			
TRN-1H			
TRN-1L			
SEP-1M			
SEP-1H			
SEP-1L			
TRN-2M			
TRN-2H			
TRN-2L			
SEP-2M			
SEP-2H			
SEP-2L			
H-ADJ			
V-ADJ			
REGIST			
LAMP			
GAIN			
IC-DENS			
CST-LOOP			
MF-LOOP			
BOOK-ERA			
DENS-ADJ			
ADJ-S			
BC-ADJ			
AE-SLOP			
PPR			
W-PLT			
PPR-R			
W-PLT-R			
PPR-G			
W-PLT-G			
PPR-B			
W-PLT-B			
DOC-STOP			

Used for the GP30F.

Used for the GP55 Series machines.

Figure 3-1003

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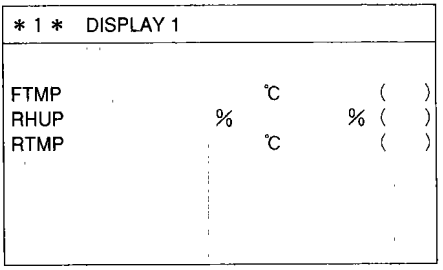
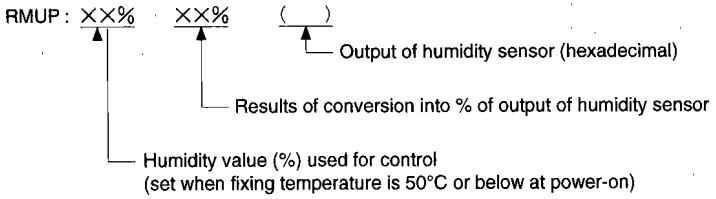
D. DISPLAY (＊1＊; control display mode)

- In this mode, the screen displays the values controlled by the CPU and descriptions of control.
- You cannot change the values or the descriptions displayed on the screen.
- Each press on the [▶] key brings up the next screen; each press on the [◀] key brings up the previous screen. (As many as six screens exist for the mode.)
- A press on the [Menu] key returns the Menu screen.



(Screen 1)

Item	Description	Remarks
FTMP	Indicates the surface temperature of the fixing roller (output of thermistor TH1).	unit: °C
RHUM	Indicates the machine internal humidity (output of humidity sensor (IC207 on DC controller PCB).	See below.
RTMP	Indicates the machine internal temperature (output of the thermistor TH201 on DC controller PCB).	unit: °C


RMUP : XX% XX% ( )
Output of humidity sensor (hexadecimal)
Results of conversion into % of output of humidity sensor
Humidity value (%) used for control
(set when fixing temperature is 50°C or below at power-on)

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* 1 * DISPLAY 2				
	BODY	DF	ST	PD
JAM :	/	/	/	
ERR :	/	/	/	
ALRM :	/	/	/	

Item	Description	Remarks
JAM	Jam Types BODY : jam in copier (Table 3-1001) DF : jam in RDF (Table 3-1003) ST : jam in sorter (Table 3-1002) PD : jam in feeding unit (Table 3-1004)	Remarks
ERR	Results of self diagnosis (E code; Tables 3-1005 to -8)	
ALRM	Type of warning (Tables 3-1009 to -11)	

No.	Type of jam	Sensor
001	Vertical path roller 1 delay jam	PS4
002	Vertical path roller 1 stationary jam	
003	Vertical path roller 2 delay jam	PS1
004	Vertical path roller 2 stationary jam	
005	Pre-registration roller delay jam	PS8
006	Pre-registration roller stationary jam	
007	Separation sensor delay jam	PS11
008	Separation sensor stationary jam	
009	Delivery vertical path delay jam	PS12
010	Delivery vertical path stationary jam	
011	Delivery delay jam	PS10
012	Delivery stationary jam	
013	Jam when right door is open during copying	——

Table 3-1001 Jams in Copier

No.	Type of jam
113	Folding assembly delay
114	Folding assembly stationary
115	Feeding path delay
116	Feeding path stationary
117	Timing
118	Staple
119	Power-on
120	Door open

Table 3-1002 Jams in Sorter

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No.	Description	Model
1	jam caused by removing the original at pick-up	RF/ADF
2	delay jam identified by the pick-up sensor	RF/ADF
3	delay jam identified by the registration sensor	RF/ADF
4	stationary jam identified by the registration sensor	ADF
5	double-feeding identified by the registration sensor	RF/ADF
8	jam identified by the registration sensor at pick-up when the leading edge of the original cannot be detected	RF
9	jam identified when the registration sensor does not turn on	ADF
17	delay jam identified by the reversal sensor	RF
18	stationary jam identified by the reversal sensor	RF
19	delay jam 2 identified by the reversal sensor	RF
32		RF
33	reversal pick-up delay jam identified by the registration sensor	RF
35	reversal pick-up stationary jam identified by the registration sensor	RF
65	delay jam identified by the delivery sensor	RF/ADF
66	stationary jam identified by the delivery sensor	RF/ADF
129	open detection	RF/ADF
130	pick-up tray or upper cover open detection	RF/ADF
131	delivery original is identified by the original sensor	RF/ADF
132	original is detected by the sensor at pick-up	RF/ADF
133	jam unique to test mode	ADF
136	original is left behind when the 1st original is picked up	RF/ADF
137	malfunction of the recirculating bar at time of original circulation (2nd and subsequent)	RF
138	feeding fault because of documents of mixed sizes	ADF
139	last original trailing edge sensor is on at all times	ADF

Table 3-1003 Jams in the DF

No.	Description	Sensor
016	cassette 5 pick-up delay	PS13
017	cassette 5 pick-up timing	
018	cassette 4 pick-up delay	PS10
019	cassette 4 pick-up timing	
020	cassette 3 pick-up delay	PS2
021	cassette 3 pick-up timing	
022	vertical path roller 4 delay	PS10
023	vertical path roller 4 timing	
024	vertical path roller 3 delay	PS2
025	vertical path roller 3 timing	
026	vertical path roller 3 stationary	
031	door open during copying	—
047	duplexing unit inlet timing	—
048	reversal paper sensor delay	PS8
049	No. 2 feeding inlet timing	PS7
050	No. 2 feeding inlet delay	
051	No. 2 feeding inlet stationary	
052	No. 2 feeding inlet (duplexing) delay	
053	No. 2 feeding inlet (duplexing) stationary	
054	No. 2 feeding assembly delay	PS4
063	No. 2 feeding assembly inlet residual	PS7
065	No. 2 feeding assembly stationary	PS4
066	No. 2 feeding assembly timing	
067	large-size PS4 detection	—
068	reversal paper size error	
069	holding tray set paper size error	PS8
072	reversal delivery passage	PS4
079	No. 2 feeding assembly residual	

Table 3-1004 Jams in the Cassette Feeding Unit

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No.	Description
000	E000 ON signal
001	E001 ON signal
002	E002 ON signal
003	E003 ON signal
004	E004 ON signal
010	E010 ON signal
030	E030 ON signal
060	E060 ON signal
063	E063 ON signal
100	E100 ON signal
110	E110 ON signal
121	E121 ON signal
202	E202 ON signal
203	E203 ON signal
204	E204 ON signal
220	E220 ON signal
673	E673 ON signal
674	E674 ON signal
700	E700 ON signal
710	E710 ON signal
711	E711 ON signal
712	E712 ON signal
716	E716 ON signal
800	E800 ON signal
804	E804 ON signal
805	E805 ON signal

Table 3-1005 Copier ERR Indications

No.	Description
00	E400 ON signal
01	E401 ON signal
02	E402 ON signal
03	E403 ON signal
04	E404 ON signal
11	E411 ON signal

Table 3-1006 DF ERR Indications

No.	Description
10	E510 ON signal
30	E530 ON signal
31	E531 ON signal
40	E540 ON signal
41	E541 ON signal

Table 3-1007 Sorter ERR Indications

No.	Description
01	E901 ON signal
02	E902 ON signal

Table 3-1008 Cassette Feeding Unit ERR Indications

No.	Description
01	idle swinging of the recirculating bar
02	original not detected by the original end sensor
03	separation fault at original pick-up
04	skew at original pick-up
05	original overriding the stopper plate at original pick-up
17	different number of originals after jam removal
18	excess originals
19	original removed in the middle of copying

The above are communicated to the copier in the form of signals when the DF detects incorrect placement of originals.

Table 3-1009 DF Alarm

No.	Description
001	no toner
002	cassette lifter error

'002' indicating an error in the cassette lifter covers the cassette feeding unit also.

Table 3-1010 Copier Alarm

No.	Description
01	stapler down
02	staple jam
05	stapler overstacking
06	stapler full stacking
07	mixed paper sizes (horizontal direction)
08	stapler unit absent
09	stapled paper in the bin
10	no staple

Table 3-1011 Sorter/Stapler Alarm

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＊1＊ DISPLAY 3
IC 862 : IC 863 : IP 848 : DCON : PEDE : DF : SORT : LANG :

Item	Description	Remarks
IC862 IC863	Indicates the version number of the FLASH ROM (IC862, IC863) on the image processor PCB.	Guide to Version Number XXXX. XX. XX For R&D Version number Type of software
IP 848	Indicates the version number of the EPROM (IC848) on the image processor PCB.	Guide to Version XX. XX For R&D Version number
DCON	Indicates the version number of the ROM (IC211) on the DC controller PCB.	
PEDE	Indicates the version number of the ROM (IC101) on the cassette feeding unit controller PCB.	
DF	Indicates the version number of the ROM on the RF or the ADF controller PCB.	
SORT	Indicates the version number of the ROM on the sorter controller PCB.	
LANG	Language 0 : COMMON 1 : JAPANESE 2 : ENGLISH 3 : FRENCH 4 : GERMAN 5 : DANISH 6 : DUTCH 7 : FINNISH 8 : ITALIAN 9 : NORWEGIAN A : PORTUGUESE B : SPANISH C : SWEDISH	

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* 1 * DISPLAY 4
G30CORE :

- The screen indicates the version number of the FLASH ROM on the image processor PCB and the version number of the ROM on the Fax PCB.
  If a Multi Device Controller (option) is connected, the screen indicates the version number of the ROM on each PCB.

Item	Description	Remarks
G30 CORE	Indicates the version number of the FLASH ROM (IC862, IC863) on the image processor PCB. However, if a Multi Device Controller is connected, indicates the version number of the ROM of the CORE on the Multi Device Controller.	
G3 FAX 2	Indicates the version number of the ROM (Q5021) on the FAX PCB installed to the Multi Device Controller.	
NIF 2SRC	Indicates the version number of the ROM on the I/F PCB installed to the Multi Device Controller.	Indicated only when the PCB is installed to the Multi Device Controller.
LIPS2+/3	Indicates the version number of the ROM on the printer PCB installed to the Multi Device Controller.	

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＊1＊ DISPLAY 5
KEY-CHK : DF-SIZE : EDIT-X : 000.0mm EDIT-Y : 000.0mm DOC-SIZE : A3

Item	Description	Remarks
KEY-CHK	Indicates the code of the key pressed (except RESET, ↑, ↓, ←, →); see Table 3-1012	
DF-SIZE	Indicates the document size identified by the ADF or RDF	
EDIT-X EDIT-Y	Editor input coordinates EDIT-X: x direction EDIT-Y: y direction	
DOC-SIZE	Indicates the document size identified by the document size sensor	

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KEY-CHK Code

Key	Code
Stop key	01
Copy Start key	12
Clear key	13
Keypad 1	14
Keypad 2	15
Keypad 3	16
Keypad 4	17
Keypad 5	18
Keypad 6	19
Keypad 7	1A
Keypad 8	1B
Keypad 9	1C
Keypad 0	1D
Pre-Heat key	1E
Interrupt key	1F
ID key	20
* key	0B
# key	60

A press on the Reset key returns the Standard screen.

Table 3-1012

One-touch key	Code
01 (31)	61
02 (32)	62
03 (33)	63
04 (34)	64
05 (35)	65
06 (36)	66
07 (37)	67
08 (38)	68
09 (39)	69
10 (40)	6A
11 (41)	6B
12 (42)	6C
13 (43)	6D
14 (44)	6E
15 (45)	6F
16 (46)	70
17 (47)	71
18 (48)	72
19 (49)	73
20 (50)	74
21 (51)	75
22 (52)	76
23 (53)	77
24 (54)	78
25 (55)	79
26 (56)	7A
27 (57)	7B
28 (58)	7C
29 (59)	7D
30 (60)	7E

The numbers within parentheses are effective when the one-touch cover is opened.

Table 3-1013

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* 1 * DISPLAY 6			
	WIDE	SW	SIZE
MULTI	:		
CST-1	:		
CST-2	:		
CST-3	:		
CST-4	:		
CST-5	:		

Item	Description	Remarks
MULTI CST-1 CST-2 CST-3 CST-4 CST-5	Indicates the dimension of the copy paper in eath cassette and multifeeder and the output of the paper size. MULTI : Multifeeder CST-1 : Cassette 1 CST-2 : Cassette 2 CST-3 : Cassette 3 CST-4 : Cassette 4 CST-5 : Cassette 5 WIDE : Output of paper width sensor (analog) SW : Output of paper length sensor ('1', '0') SIZE : Paper width (mm)	CST1 represents the topmost cassette.

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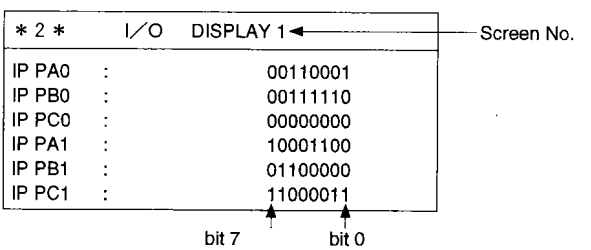
E. I/O DISPLAY (*2*; I/O display mode)

- The screen indicates the input/output state of the CPU.
- You cannot change the settings or the descriptions on the screen.
- Each press on the [▶] brings up the next screen; each press on the [◀] brings up the previous screen.
- A press on the [Menu] key returns the Menu screen.
- See the table below for descriptions of the addresses:

Address	Description	Screen
IP PA0 ⌇ IP IPC PORT	Input/output port of the slave CPU (IC875) on the image processor PCB	1, 2
CORE PA0 ⌇ CORE PC	Input/output port of the master CPU (IC884) on the image processor PCB	3, 4
DC PA0 ⌇ DC PC3	CPU input/output port of the DC controller PCB	5, 6
PEDE-0 ⌇ PEDE-Y	CPU input/output port of the cassette feeding controller PCB	7, 8
DF-A ⌇ DF-AD8	CPU input/output port of the DF controller PCB	9, 10
ST-A ⌇ ST-EX-C	CPU input/output port of the sorter controller PCB	11 to12



Display Sample

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1. Copier

Screen	Address	bit	Description	Signal	Jack	Remarks
1	IP PA 0 (input)	0	—	—	—	—
		1		ICPREADY	J815-A22	0: connected, 1: open
		2	retention memory connect signal	REPREADY	J815-B22	0: connected, 1: open
		3			J809-B9	
		4	—	—	—	—
		5	A/D converter IC calibration output	—	internal	0: calibration 1: normal
		6	—	—	—	—
		7	image processing board connect signal		J816-A42	0: connect, 1: open
	IP PB 0 (output)	0	marker select signal	—	internal	0: marker post identification signal 1: original
		1	AE histogram select signal	—	internal	0: AE, 1: normal
		2	path switch signal	—	internal	0: internal bus 1: CPU bus
		3	HSYNC switch signal	—	internal	0: BD, 1: internal SYNC
		4	—	—	—	—
		5	—	—	—	—
		6	—	—	—	—
		7	EXPSYNC	—	internal	—
	IP PC 0 (output)	0	A/D conversion IC calibration input	—	internal	0: normal 1: calibration
		1	ASSIST count	CNT*	J801-3	0: normal, 1: count
		2	—	—	—	—
		3	—	—	—	—
		4			internal	0: address output 1: video input
		5	—	—	—	—
		6	—	—	—	—
		7	projector image reversal	—	internal	0: normal, 1: reversal
	IP PA 1 (input)	0	control card connect signal	CONNECT*	J819-A1	0: connect, 1: open
		1	main motor lock	LOCK*	J806-A14	0: lock, 1: error
		2	—	—	—	—
		3	delivery signal (delivery end signal from DC controller)	EXT-PAPER	J809-B8	1: delivery
		4	power ready (power ready end signal from DC controller)	DC-READY	J809-A6	1: ready
		5	pick-up ready (pick-up ready end signal from DC controller)	FEED*	J809-A8	1: ready
		6	scan request (scan request signal from DC controller)	SCN-REQ*	J809-B2	1: request
		7	paper trailing edge detection (multifeeder paper trailing edge detection signal from DC controller)	READ EDGE-DTC*	J809-B7	1: trailing edge

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Screen	Address	bit	Description	Signal	Jack	Remarks
1	IP PB 1 (input)	0	copyboard cover open/closed detecting switch	CBCC	J806-B8	0: open, 1: closed
		1	original size detection 1	DSZ1	J805-2	0: present, 1: absent
		2	original size detection 2	DSZ2	J808-2	0: present, 1: absent
		3	original size detection 3	DSZ3	J812-2	0: present, 1: absent
		4	original size detection 4	DSZ4	J813-2	0: present, 1: absent
		5	—	—	—	—
		6	—	—	—	—
		7	scanning lamp error	LAERR	J860-B10	0: normal, 1: error
	IP PC 1 (output)	0	bus switching	—	internal	0: video, 1: CPU
		1	—	—	—	—
		2	—	—	—	—
		3	—	—	—	—
		4	laser power switching	PWRSW	J803-1	0: high output, 1: normal
		5	laser bias on signal	APCON	J803-4	0: ON, 1: OFF
		6	scanner cooling fan	FM1D	J806-B11	0: OFF, 1: ON
		7	PG select	—	internal	0: PG, 1: original
2	IP PA 2 (output)	0	control card drive signal	CCNTD	J811-9	1: drive
		1	scanning lamp (LA1) on signal	LRD	J806-B12	0: on
		2	copier ratio select signal	SCRC 0	J806-A7	
		3	copier ratio select signal	SCRC 1	J806-A6	
		4	scanner speed control on/off signal	SCRC	J860-A8	0: control on
		5	scanner motor drive signal	SCMD	J806-A3	0: on
		6	scanner forward signal	SCFW	J860-A4	1: forward
		7	power supply switch signal	REMOT	J806-A12	0: 24V, 1: 40V
	IP PB 2 (output)	0	—	—	—	—
		1	—	—	—	—
		2	—	—	—	—
		3	original size sensor power on signal (PCB internal signal)			1: ON
		4	image processor/power supply check signal		J809-A5	1: ready
		5	pick-up request signal		J809-A9	1: request
		6	registration roller drive request signal		J809-B3	1: on
		7	lamp on signal		J809-B5	1: on

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Screen	Address	bit	Description	Signal	Jack	Remarks
2	IP PC 2 (output)	0	analog processor PCB communication signal (D/A clock pulse)	—	J811-22	
		1	analog processor PCB communication signal (D/A data)	—	J811-23	
		2	analog processor PCB communication signal (D/A load)	—	J811-20	
		3	options power supply remote signal	—	J823-2	1: ON
	IP PC 2 (input)	4	scanner home position sensor (PS13) signal	SCHP	J814-2	1; home position
		5	scanner original leading edge sensor (PS14) signal	SCDP	J814-5	1: original leading edge
		6	for factory	—	—	
		7	for R&D	—	—	
	IP KAZU 1 (output)	0	watchdog signal (PCB internal signal)	—	—	
		1	—	—	—	
		2	—	—	—	
		3	CPU bus select	—	internal	0: CPU, 1: video
		4	—	—	—	
		5	—	—	—	
		6	—	—	—	
		7	—	—	—	
	IP KAZU 0 (output)	0	PCB internal signal (pseudo image leading edge)	—	internal	1: image leading edge
		1	image leading edge (for image processing board)	—	J816-A38	1: image leading edge
		2	—	—	—	
		3	—	—	—	
		4	—	—	—	
		5	—	—	—	
		6	pre-ratio select image switching	—	internal	1: original
		7	—	—	—	
	IP IPC PORT	0	area generation IC reset signal	—	internal	0: reset
		1	area generation IC image leading edge signal	—	internal	1: image leading edge
		2	sync signal generation IC reset signal	—	internal	0: reset
		3	sync signal generation IC image leading edge signal	—	internal	1: image leading edge
		4	Fax frame erasing data	—	internal	0: 00H, 1: FFH
		5	reserved	—	—	
		6	reserved	—	—	
		7	—	—	—	

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Screen	Address	bit	Description	Signal	Jack	Remarks
3	CORE PA 0 (output)	0	key digit 8	DIGIT8	J818-A6	
		1	key digit 9	DIGIT9	J818-A5	
		2	key digit 10	DIGIT10	J818-A4	
		3	key digit 11	DIGIT11	J818-A3	
		4	control panel power ready (to MDC)	OPPRDY	J802-49	
		5	controller power ready (to fax)	COPRDY		
		6	IP power ready (to MDC)	IPPRDY	J802-35	
		7	watchdog pulse	WDCK	internal	
	CORE PB 0 (output)	0	key digit 0	DIGIT0	J818-A14	
		1	key digit 1	DIGIT1	J818-A13	
		2	key digit 2	DIGIT2	J818-A12	
		3	key digit 3	DIGIT3	J818-A11	
		4	key digit 4	DIGIT4	J818-A10	
		5	key digit 5	DIGIT5	J818-A9	
		6	key digit 6	DIGIT6	J818-A8	
		7	key digit 7	DIGIT7	J818-A7	
	CORE PC 0 (output)	0	PCB internal signal	VBUS-DIR0	internal	
		1	PCB internal signal	VBUS-DIR1	internal	
		2	PCB internal signal	VBUS-DIR2	internal	
		3	PCB internal signal	VBUS-DIR3	internal	
		4	PCB internal signal	VBUS-EN0	internal	
		5	PCB internal signal	VBUS-EN1	internal	
		6	PCB internal signal	VBUS-EN2	internal	
		7	PCB internal signal	VBUS-EN3	internal	
	CORE PA 1 (input)	0	touch key return 8	T-RETURN8	J819-A3	
		1	touch key return 9	T-RETURN9	J819-A2	
		2	touch key return 10	T-RETURN10	J819-B11	
		3	touch key return 11	T-RETURN11	J819-B10	
		4	touch key return 12	T-RETURN12	J819-B9	
		5	touch key return 13	T-RETURN13	J819-B8	
		6	touch key return 14	T-RETURN14	J819-B7	
		7	touch key return 15	T-RETURN15	J819-B6	
	CORE PB 1 (input)	0	touch key return 0	T-RETURN0	J819-A11	
		1	touch key return 1	T-RETURN1	J819-A10	
		2	touch key return 2	T-RETURN2	J819-A9	
		3	touch key return 3	T-RETURN3	J819-A8	
		4	touch key return 4	T-RETURN4	J819-A7	
		5	touch key return 5	T-RETURN5	J819-A6	
		6	touch key return 6	T-RETURN6	J819-A5	
		7	touch key return 7	T-RETURN7	J819-A4	

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Screen	Address	bit	Description	Signal	Jack	Remarks
3	CORE PC 1 (input)	0	touch key return 16	T-RETURN16	J819-B5	
		1	touch key return 17	T-RETURN17	J819-B4	
		2	touch key return 18	T-RETURN18	J819-B3	
		3	touch key return 19	T-RETURN19	J819-B2	
		4	control panel power switch	MAIN-SW	J818-B9	
		5	service switch	SRMOD	J814-8	
		6	—	—	—	—
		7	—	—	—	—
4	CORE PA 2 (output)	0	PCB internal signal	—	internal	
		1	PCB internal signal	—	internal	
		2	PCB internal signal	—	internal	
		3	PCB internal signal	—	internal	
		4	PCB internal signal	—	internal	
		5	PCB internal signal	—	internal	
		6	PCB internal signal	—	internal	
		7	PCB internal signal	—	internal	
	CORE PB 2 (output)	0	PCB internal signal	—	—	
		1	PCB internal signal	—	—	
		2	PCB internal signal	—	—	
		3	PCB internal signal	—	—	
		4	PCB internal signal	—	—	
		5	PCB internal signal	—	—	
		6	PCB internal signal	—	—	
		7	PCB internal signal	—	—	
	CORE PC 2 (output)	0	options power supply remote signal	APCPC	J823-2	
		1	LCD off signal	CCT-OFF	—	
		2	—	—	—	
		3	—	—	—	
		4	—	—	—	
		5	—	—	—	
		6	—	—	—	
		7	—	—	—	
	CORE P6 (output)	0	—	—	—	
		1	LCD backlight on/off	CCT-ON	J818-B1	1: ON
		2	interrupt (to MC)	INT-COPY	J818-B3	—

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Screen	Address	bit	Description	Signal	Jack	Remarks
4	CORE P7 (output)	0	MDC power ready (from MDC)	CPRDY		
		1	fax PCB power supply ready (from fax)	DVPRDY		
		2	one-touch key switch	OTKSW	J818-A2	
		3	front door switch	FDOO	J823-1	
		4	MDC communication signal	SRR	J802-29/30	—
		5	MDC communication signal	OPRR	J802-44/45	—
		6	control card V detection			0: card present
		7	copyboard cover open/closed detection	CBCC	J806-B8	0: open
	CORE PA	0	retention memory clock pulse	RSYNC	J815-A24	
		1	MDC cloth pulse	PSYNC	J802-21/22	
		2	—	—	—	
		3	—	—	—	
		4	—	—	—	
		5	LCD contrast			
		6	—	—	—	
		7	—	—	—	
	CORE PB (output)	0	buzzer sound	BUZZER	J818-A1	
		1	power supply lamp on	POWER-LED	J818-B8	
		2	copy start key green on	COPY-G-LED	J818-B7	
		3	copy start key red on	COPY-R-LED	J818-B6	
		4	status indicator lamp red on	G-LED	J818-B5	
		5	status indicator lamp red on	R-LED	J818-B4	
		6	interrupt key LED on	INIT-LED	J818-B3	
		7	pre-heat key LED on	PRHT	J818-B2	
	CORE PC (input)	0	hard key return 0	H-RETURN0	J818-B14	
		1	hard key return 1	H-RETURN1	J818-B13	
		2	hard key return 2	H-RETURN2	J818-B12	
		3	hard key return 3	H-RETURN3	J818-B11	
		4	hard key return 4	H-RETURN4	J818-B10	
		5	—	—		
		6	—	—		
		7	—	—		

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Screen	Address	bit	Description	Signal	Jack	Remarks
5	DC PA 0 (output)	0	cassette 1 pick-up clutch (CL4) drive signal	CLD4	J209-B4	1: ON
		1	cassette 2 pick-up clutch (CL1) drive signal	CLD1	J210-A2	1: ON
		2	vertical path roller 1 clutch (CL3) drive signal	CLD3	J209-B2	1: ON
		3	vertical path roller 2 clutch (CL2) drive signal	CLD2	J210-A4	1: ON
		4	multifeeder pick-up clutch (CL7) drive signal	CLD7	J204-A7	1: ON
		5	pre-registration roller clutch (CL9) drive signal	CLD9	J208-B8	1: ON
		6	—	—	—	
		7	—	—	—	
	DC PB 0 (output)	0	registration roller clutch (CL8) drive signal	CLD8	J204-B8	1: ON
		1	registration roller clutch drive voltage switch (PCB internal signal)	—	J204-B8	1: 24V 0: 18V
		2	No. 1 paper deflecting solenoid (SL4) drive signal	SL4D	J207-A2	1: ON
		3	feeding fan (FM4) drive signal	FM4D	J205-A2	1: ON
		4	cassette 1 lifter motor (M7) drive signal	C1LMD	J209-B1	1: ON
		5	cassette 2 lifter motor (M6) drive signal	C2LMD	J209-B7	1: ON
		6	multifeeder pick-up solenoid (SL3) drive signal	SL3D	J294-A5	1: ON
		7	developing clutch (CL10) drive signal	CLD10	J213-3	1: ON
6	DC PC 0 (output)	0	transfer corona wire cleaner motor (M5) drive signal	$\overline{\text{PCLMF}}$	J205-B11	1: forward 0: reverse
		1	transfer corona wire cleaner motor (M5) drive signal 2	$\overline{\text{PCLMR}}$	J205-B10	0: forward 1: reverse
		2	auto power-off signal	$\overline{\text{PWOFF}}$	J205-A12	
		3	laser scanner motor (M3) speed switching signal	$\overline{\text{LMD}}$	J207-A11	0: high-speed
		4	laser scanner motor (M3) on/off signal	LMD	J207-A13	0: ON
		5	exhaust fan (FM2) drive signal	FM2D	J207-B1	1: ON
		6	exhaust fan (FM2) speed switch signal (PCB internal signal)	—	J207-B9	1: high speed
		7	transfer guide bias on signal	TGBON	J206-11	1: ON

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Screen	Address	bit	Description	Signal	Jack	Remarks
6	DC PA 1 (output)	0	counter drive signal	TCNTD	J205-B7	1: ON
		1	option counter drive signal	OTCNTD	J250-B5	1: ON
		2	fixing main heater (H1) drive signal	MHRD	J203-B2	1: ON
		3	fixing sub heater (H2) drive signal	SHRD	J203-B5	1: ON
		4	pre-exposure lamp drive signal	PEXP	J205-B9	1: ON
		5	laser cooling fan (FM3) drive signal	FMD3	J205-A2	1: ON
		6	cleaning belt drive solenoid (SL5) drive signal	SL5D	J207-B11	1: ON
		7	main motor (M1) drive signal	MMD	J204-B10	1: ON
	DC PB 1 (output)	0	cassette 1 pick-up roller releasing solenoid (SL2) drive signal	SL2D	J209-B6	1: ON
		1	cassette 2 pick-up roller releasing solenoid (SL1) drive signal	SL1D	J209-B8	1: ON
		2	primary corona wire cleaner motor (M4) drive signal 1	TCLMF	J209-A4	0: forward 1: reverse
		3	primary corona wire cleaner motor (M4) drive signal 2	TCLMR	J209-A3	1: forward 0: reverse
		4	watchdog signal (PCB internal signal)	—	—	—
		5	developing bias ACON signal	ACBTP	J206-3	1: ACON
		6	PCB internal signal	—	—	—
		7	transfer guide bias drive signal	TGBON	J206-11	1: ON
	DC PC 1 (output)	0	PCB internal signal	—	—	—
		1	PCB internal signal	—	—	—
		2	PCB internal signal	—	—	—
		3	DC power supply check signal	—	J202-A4	signal used for communication with the image processor PCB
		4	pick-up check signal	—	J202-A2	
		5	scan request signal	—	J202-B8	
		6	paper trailing edge signal	—	J202-B3	
		7	delivery paper trailing edge signal	—	J202-B2	
	DC PA2 (input)	0	IP check signal	—	J202-A5	signal used for communication with the image processor PCB
		1	pick-up request signal	—	J202-A1	
		2	lamp on signal	—	J202-B5	
		3	shut-off open circuit signal (PCB internal signal)	—	—	1: error (e800 on)
		4	counter open circuit signal (PCB internal signal)	—	—	1: error (E030)
		5	option counter open circuit detection (PCB internal signal)	—	—	1: error (E030)
		6	SSR1 error detection signal (PCB internal signal)	—	—	1: auto power-off signal on (power switch turns off)
		7	SSR2 error detection signal (PCB internal signal)	—	—	

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Screen	Address	bit	Description	Signal	Jack	Remarks
6	PB 2 (input)	0	—	—	—	
		1	toner sensor (TS1) signal	$\overline{TEP}$	J204-B2	0: full
		2	—	—	—	
		3	multifeeder paper sensor (PS9) signal	MFPD	J204-A2	0: paper present
		4	right door open detection (PS7) signal	$\overline{RDOP}$	J209-A11	1: open
		5	cassette 2 lifter position sensor (PS3) signal	C2LTP	J210-B5	1: lifter detection
		6	cassette 2 paper sensor (PS2) signal	C2PD	J210-B2	1: paper present
		7	cassette 1 paper sensor (PS5) signal	C1PD	J209-A5	1: paper present
	DC PC 2 (input)	0	vertical path roller 1 paper sensor (PS4) signal	PDP2	J209-A2	1: paper detected
		1	vertical path roller 2 paper sensor (PS1) signal	PDP1	J210-A6	1: paper detected
		2	pre-registration roller paper sensor (PS8) signal	PDP3	J204-A12	0: paper detected
		3	separation paper sensor (PS11) signal	PDP4	J205-A6	0: paper detected
		4	cassette 1 lifter position sensor (PS6) signal	C1LTP	J209-A8	1: lifter detected
		5	delivery sensor (PS10) signal	PDP5	J207-A7	0: paper detected
		6	—	—	—	
		7	delivery vertical path paper/face up delivery sensor (PS15/PS23) signal	PDP11	J203-A8	0: paper detected
	DC PA 3 (input)	0	cassette 1 paper length detecting switch (SW102)	C1SZ2	J208-A5	
		1	cassette 1 paper length detecting switch (SW101)	C1SZ1	J208-A6	
		2	cassette 2 paper length detecting switch (SW 102)	C2SZ2	J208-A1	
		3	cassette 2 paper length detecting switch (SW101)	C2SZ1	J208-A2	
		4	transfer corona wire cleaner detection (SW7) signal	$\overline{TCLHP}$	J205-A9	0: cleaner detected
		5	transfer corona wire cleaner detection (SW8) signal	$\overline{TCLRP}$	J205-A11	0: cleaner detected
		6	primary corona wire cleaner detection (SW5) signal	$\overline{PCLHP}$	J205-B12	0: cleaner detected
		7	primary corona wire cleaner detection (SW6) signal	$\overline{PCLRP}$	J205-B14	0: cleaner detected

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Screen	Address	bit	Description	Signal	Jack	Remarks
6	DC PB 3	0	for factory	—	—	
		1	for factory	—	—	
		2	for factory	—	—	
		3	for factory	—	—	
		4	counter configuration (bit 0)	—	—	
		5	counter configuration (bit 1)	—	—	
		6	main motor constant speed signal	LOCK	J204-B11	
		7	laser scanner motor constant speed signal	$\overline{\text{LMPDY}}$	J207-A12	0: constant speed
	DC PC 3 (input)	0	delivery vertical path unit present signal	$\overline{\text{VRPHC}}$	J203-A13	0: installed
		1	cassette 1 paper width detecting VR (VR3) signal	C1PPW	J208-B5	
		2	cassette 2 paper width detecting VR (VR2) signal	C2PPW	J208-B2	
		3	—	—	—	
	DC PC 3 (output)	4	delivery paper vertical path roller drive motor/face up delivery unit drive motor drive signal	A	J203-A1	while rotating, alternates between '1' and '0'.
		5		$\overline{\text{A}}$	J203-A2	
		6		B	J203-A5	
		7		$\overline{\text{B}}$	J203-A6	

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2. Cassette Feeding Unit

Screen	Address	Bit	Display	Signal	Jack	Remarks
7	PEDE-0 (output)	0	Switch-back motor drive signal (duplexing unit)	A	J103-B4	Alternates between '1' and '0' during rotation
		1	Switch-back motor drive signal (duplexing unit)	B	J103-B8	
		2	Switch-back motor drive signal (duplexing unit)	$\overline{A}$	J103-B5	
		3	Switch-back motor drive signal (duplexing unit)	$\overline{B}$	J103-B9	
		4	Paper guide motor drive signal (duplexing unit)	A	J104-B9	Alternates between '1' and '0' during rotation
		5	Paper guide motor drive signal (duplexing unit)	B	J104-B13	
		6	Paper guide motor drive signal (duplexing unit)	$\overline{A}$	J104-B10	
		7	Paper guide motor drive signal (duplexing unit)	$\overline{B}$	J104-B14	
	PEDE-1 (output)	0	Pick-up roller 3 release solenoid drive signal	$\overline{C3RR}$	J107-4	1 : ON
		1	Pick-up roller 4 release solenoid drive signal	$\overline{C4RRL}$	J112-B8	1 : ON
		2	Pick-up roller 5 release solenoid drive signal	$\overline{C5RRL}$	J114-B8	1 : ON
	PEDE-1 (input)	3	Feeding unit constant state signal	PLOCK	J108-2	0 : Constant speed state
		4	Cassette 4 paper length sensor signal 1	C4SZ1	J113-2	1 : SW101 'ON'
		5	Cassette 4 paper length sensor signal 2	C4SZ2	J113-1	1 : SW102 'ON'
		6	Cassette 5 paper length sensor signal 1	C5SZ1	J113-9	1 : SW101 'ON'
		7	Cassette 5 paper length sensor signal 2	C5SZ2	J113-8	1 : SW102 'ON'

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Cassette Feeding Unit

Screen	Address	Bit	Display	Signal	Jack	Remarks
7	PEDE-2 (input)	0	——	——	——	
		1	Signal for communication with copier	FEED-STOP	J102-4	
		2	Signal for communication with copier	FEED-START	J102-5	
		3	Reversal sensor signal	PDP9	J103-A5	0 : Paper detected
		4	Holding tray paper sensor signal	TRPD	J104-A7	0 : Paper detected
		5	Cassette 3 paper sensor signal	C3PD	J105-7	1 : Paper detected
		6	Cassette 4 paper sensor signal	C4PD	J112-A5	1 : Paper detected
		7	Cassette 5 paper sensor signal	C5PD	J114-A5	1 : Paper detected
	PEDE-3 (output)	0	L paper deflecting plate drive signal (duplexing unit)	LSLD	J104-B2	1 : ON
		1	M paper deflecting drive signal (duplexing unit)	MSLD	J104-B3	1 : ON
		2	S paper deflecting drive signal (duplexing unit)	SSLD	J104-B4	1 : ON
		3	SS paper deflecting plate drive signal (duplexing unit)	SSSLD	J104-B5	1 : ON
		4	Stopper plate solenoid drive signal (duplexing unit)	SL3DU	J104-A5	1 : Stopper up
		5	Stopper plate solenoid drive signal (duplexing unit)	SL3DD	J104-A4	1 : Stopper down
		6	Feeding unit speed switching signal	——	J108-3	1 : Low-speed (automatically changes by model)
		7	Feeding unit motor drive signal	PEDMD	J108-1	1 : ON

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Cassette Feeding Unit

Screen	Address	Bit	Display	Signal	Jack	Remarks
7	PEDE-6 (output)	0	Cassette 3 lifter moter drive signal	C3LMD	J106-1	1 : ON
			Feeding roller down solenoid drive signal (duplexing)	RDSD	J104-A2	
		1	Cassette 4 lifter motor drive signal	C4LMD	J112-B1	1 : ON
		2	Cassette 5 lifter motor drive signal	C5LMD	J114-B2	1 : ON
		3	No.2 paper deflecting plate drive signal (duplexing unit)	$\overline{\text{SL8D}}$	J103-A1	1 : ON
		4	——	——	——	
		5	——	——	——	
		6	——	——	——	
		7	——	——	——	
	PEDE-7 (input)	0	Cassette 3 paper width VR signal	C3PPW	J106-10	
		1	Cassette 4 paper width VR signal	C4PPW	J113-6	
		2	Cassette 5 paper width VR signal	C5PPW	J113-6	
		3	Cassette 3 lifter position signal	C3LTP	J105-4	0 : ON
			Paper guide plate home position signal (duplexing unit)	PGHP	J104-B7	
		4	Cassette 4 lifter position signal	C4LTD	J112-A8	0 : ON
		5	Cassette 5 lifter position signal	C5LTD	J114-A8	0 : ON
		6	——	——	——	
		7	——	——	——	

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Cassette Feeding Unit

Screen	Address	Bit	Display	Signal	Jack	Remarks
8	PEDE-A (input)	0	——	——	——	
		1	Paper reversal sensor signal (duplexing unit)	PDP9	J103-A5	0 : Paper detected
		2	No.2 feeder inlet sensor signal (duplexing unit)	PDP8	J103-A2	0 : Paper detected
		3	Vertical path roller 3 paper sensor signal	PDP12	J107-11	1 : Paper detected
		4	Vertical path roller 4 paper sensor signal	PDP6	J112-A2	0 : Paper detected
		5	Vertical path roller 5 paper sensor signal	PDP7	J114-A2	0 : Paper detected
		6	No. 2 feeder paper sensor signal (duplexing unit)	PDP	J104-A10	0 : Paper detected
		7	Holding tray paper sensor signal (duplexing unit)	TRPD	J104-A7	0 : Paper detected
	PEDE-B (input)	0	Cassette 3 paper length sensor signal 1	C3SZ1	J105-2	1 : SW101 'ON'
		1	Cassette 3 paper length sensor signal 2	C3SZ2	J105-1	1 : SW102 'ON'
		2	——	——	——	
		3	——	——	——	
		4	Right door open sensor signal	$\overline{\text{RDOO}}$	J107-8	0 : Open
		5	Left door open sensor signal (duplexing unit)	$\overline{\text{LFDO}}$	J103-B2	0 : Open
		6	Duplexing unit insertion signal (duplexing unit)	——	J104-A13	0 : Connect
		7	——	——	——	
	PEDE-C (output)	0	Vertical path roller 3 drive signal	$\overline{\text{CL2D}}$	J107-6	1 : ON
		1	Vertical path roller 4 drive signal	$\overline{\text{C4VRD}}$	J112-B6	1 : ON
		2	Vertical roller 5 drive signal	$\overline{\text{C5VRD}}$	J114-B6	1 : ON
		3	Cassette 3 pick-up signal	$\overline{\text{CL1D}}$	J107-4	1 : ON
		4	Cassette 4 pick-up signal	$\overline{\text{C5PU}}$	J114-B4	1 : ON
		5	Cassette 5 pick-up signal	$\overline{\text{C4PU}}$	J112-B4	1 : ON
		6	——	——	——	
		7	Watchdog signal	——	——	
	PEDE-X	0	——	——	——	
		1	——	——	——	
		2	——	——	——	
		3	——	——	——	
		4	——	——	——	
		5	——	——	——	
		6	——	——	——	
		7	——	——	——	
	PEDE-Y	0	——	——	——	
		1	——	——	——	
		2	——	——	——	
		3	——	——	——	
		4	——	——	——	
		5	——	——	——	
		6	——	——	——	
		7	——	——	——	

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3. ADF-B1

Screen	Address	I/O	Bit	Display	Signal	Jack	Remarks
9	DF-A	I	0	Cover open/closed sensor (MS2) signal	UPCC	J3-2	0 : Open
		I	1	ADF open/closed sensor (MS1) signal	DFC	J2-3	0 : Open
		O	2	LED1 ON signal (PCB signal)	——	——	0 : ON
		O	3	LED2 ON signal (PCB signal)	——	——	0 : ON
		I	4	Pick-up roller sensor (S3) signal	PUSP	J8-7A	1 : Detected
		I	5	Pick-up sensor (S5) signal	PDP1	J9-1	1 : Detected
		I	6	Driver sensor (S1) signal	PDP2	J10-2	1 : Detected
		O	7	LED3 ON signal (PCB signal)	——	——	0 : ON
	DF-B	O	0	Document SET LED ON signal	DSD	J8-4B	1 : ON
		O	1	Pick-up motor (M2) drive signal	PUMD	J7-1	1 : ON
		O	2	Delivery motor (M3) drive signal	DMD	J6-1	1 : ON
		O	3	Belt motor clock pulse	——	——	1 : ON
		O	4	Belt feeder moter (M1) drive signal	BMD	J5-1	1 : ON
		O	5	Brake (BK) drive signal	BKD	J4-1	1 : ON
		O	6	Paper holding plate solenoid (SL1) drive signal	WGTSLD	J9-7	1 : ON
		O	7	Stopper plate solenoid (SL2) drive signal	STPSLD	J12-1	1 : ON
	DF-C	I/O	0	Communication signal	——	——	
		I/O	1	Communication signal	——	——	
		I/O	2	Communication signal	——	——	
		I/O	3	Delivery motor clock pulse signal	——	——	
		I/O	4	PCB signal	——	——	
		I/O	5	PCB signal	——	——	
		I/O	6	Communication signal	——	——	
		I/O	7	Communication signal	——	——	
	DF-EA		0	——	——	——	
			1	——	——	——	
			2	——	——	——	
			3	——	——	——	
			4	——	——	——	
			5	——	——	——	
			6	——	——	——	
	DF-EB		7	——	——	——	
			0	——	——	——	
			1	——	——	——	
			2	——	——	——	
			3	——	——	——	
			4	——	——	——	
			5	——	——	——	
			6	——	——	——	
			7	——	——	——	

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ADF-B1

Screen	Address	I/O	Bit	Display	Signal	Jack	Remarks
10	DF-AD1	I	—	Document stop position VR	—	—	Hexadecimal
	DF-AD2	I	—	DIP switches 3,4	—	—	
	DF-AD3	I	—	DIP switches 1,2 Push switch	—	—	
	DF-AD4	I	—	2-on-1 VR	—	—	
	DF-AD5	I	—	Serial communication sensor	—	—	
	DF-AD6	I	—	Last document trailing edge sensor (S8) signal	DED	J8-3B	
	DF-AD7	I	—	Document sensor (S6) signal	DEP	J11-2	

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4. ADF-C1

Screen	Address	I/O	Bit	Display	Signal	Jack	Remarks
9	DF-A	O	0	Separation motor drive signal	$\overline{SMD}$	J4-6	1 : ON
		O	1	Document set LED ON signal	$\overline{DSD}$	J4-4	1 : ON
		O	2	Brake drive signal	$\overline{BKD}$	J6-2	1 : ON
		O	3	Stopper plate solenoid drive signal	$\overline{STPSLD}$	J11-2	1 : ON
		O	4	Retaining plate solenoid drive signal	$\overline{RTPSLD}$	J14-2	1 : ON
		O	5	Delivery motor rotation signal	DMRD	——	1 : Reverse
		O	6	Clutch drive signal	$\overline{CLD}$	J12-2	1 : ON
		O	7	PCB signal	——	——	
	DF-B	O	0	Belt motor P.W.N. signal	BMPWM	——	
		O	1	Belt motor rotation signal	BMRD	——	1 : Reverse
		O	2	Belt motor drive signal	BMON	——	0 : ON
		O	3	Delivery motor P.W.N. signal	DMPWN	——	
		O	4	Delivery motor drive signal	DMON	——	0 : ON
		O	5	Pick-up motor drive signal	PUMD	J9-1	0 : ON
		I	6	Last document sensor signal	LDD	J4-2	0 : Paper detected
		I/O	7	PCB signal	——	——	
	DF-C	I/O	0	Communication signal	——	——	
		I/O	1	Communication signal	——	——	
		I/O	2	PCB signal	——	——	
		O	3	Belt motor clock pulse signal	BMCLK	J5-13	
		I/O	4	PCB signal	——	——	
		—	5	——	——	——	
		I/O	6	PCB signal	——	——	
		I/O	7	PCB signal	——	——	
10	DF-EA	—	0	——	——	——	
		—	1	——	——	——	
		I	2	Push switch 2 signal	——	——	
		I	3	Push switch 3 signal	——	——	
		I	4	Push switch 1 signal	——	——	
		—	5	——	——	——	
		O	6	LED 1 ON signal	——	——	
		O	7	LED 2 ON signal	——	——	
	DF-EB	—	0	——	——	——	
		—	1	——	——	——	
		I	2	DIP switch 1-1 setting	——	——	
		I	3	DIP switch 1-2 setting	——	——	
		I	4	DIP switch 1-3 setting	——	——	
		I	5	DIP switch 1-4 setting	——	——	
		I	6	DIP switch 1-5 setting	——	——	
		I	7	DIP switch 1-6 setting	——	——	

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ADF-C1

Screen	Address	Display	Signal	Jack	Remarks
11	DF-AD1	Document empty signal	DEP	J10-3	Hexadecimal
	DF-AD2	Paper detection signal 3	PDP3	J5-15	
	DF-AD3	——	——	——	
	DF-AD4	Paper detection signal 1	PDP1	J5-4	
12	DF-AD5	Paper detection signal 2	PDP2	J5-7	
	DF-AD6	——	——	——	
	DF-AD7	ADF closed signal	ADFC	J13-2	
	DF-AD8	Upper cover closed signal	$\overline{\text{UPCC}}$	——	

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5. Stapler Sorter-C1

Screen	Address	Bit	Display	Signal	Jack	Remarks
11	ST-A	0	Reserved	—	—	
		1	Stapling home position sensor (P112)	SPL-HP	J11-3	1: Stapling at HP
		2	Stapler unit swing sensor (MS9) signal	SWG SET	J8-5	1: Stapling at HP or stapling position
		3	Stapler cover open/closed sensor (MS5)	SPLOPN	J10-3	1: Stapler cover open
		4	Guide bar home position sensor (P17) signal	SGBHP	J12-6	1: At home position
		5	Lead cam home position sensor (P15) signal	LCHP	J14-5	1: At home position
		6	Reserved	—	—	
		7	Reserved	—	—	
	ST-B	0	Guide bar swing motor (M3) phase A excitation	$\overline{MA}$	J13-3,5	Alternates between '1' and '0' while motor is ON
		1	Guide bar swing motor (M3) phase B excitation	$\overline{MB}$	J13-4.6	
		2	Guide bar swing motor (M3) drive signal	MON	J13-2	1: Motor ON
		3	Stapler motor (M4) forward signal	$\overline{SPLMFW}$	—	0: Forward
		4	Stapler motor (M4) reverse signal	$\overline{SPLMFW}$	—	0: Reverse
		5	Switch-back path solenoid (SL1) drive signal	$\overline{SBPSLD}$	J7-9	0: SL 1 ON
		6	Paper path switch solenoid (SL2) drive signal	$\overline{PSLD}$	J7-8	0: SL 2 ON
		7	Paper holding plate solenoid (SL3) drive signal	$\overline{PHSLD}$	J5-2	0: SL 3 ON

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Stapler Sorter-C1

Screen	Address	Bit	Display	Signal	Jack	Remarks
11	ST-C	0	Motor switching signal	——	——	
		1	Stapling ready indicator ON signal	SPLOK	J8-4	1: LED ON
		2	Bin paper sensor LED ON signal	BPD	J12-2	
		3	Motor clock signal	——	——	
		4	Stapler unit swing motor (M5) drive signal	SWGMD	J9-1	1: M5 ON
		5	Feeder motor clock sensor (P16) signal	FMCLK	J5-4	
		6	Reserved	——	——	
		7	Feeder motor (M1) brake signal	——	——	1: M1 OFF
	ST-EX-A	0	Stapling position sensor signal	SPD	——	1: Paper detected
		1	Reserved	——	J8-8	
		2	MANUAL STAPLE key signal	MNSPL	J8-1	0: Switch ON
		3	Non-sort paper sensor signal	NSPEXT	J7-5	0: Paper detected
		4	Sort paper sensor signal	SPEXT	J7-2	0: Paper detected
		5	Bin unit home position sensor signal	BHP	J14-2	1: Bin unit at HP
		6	Joint sensor signal	SOP	J2-2	0: Sorter detached
		7	Reset signal	——	——	
	ST-EX-B	0	Stapler position set sensor signal	SPL-SET	J10-6	0: At stapling position
		1	Reserved	——	——	
		2	Reserved	——	——	
		3	Reserved	——	——	
		4	Reserved	——	——	
		5	Reserved	——	——	
		6	Reserved	——	——	
		7	Reserved	——	——	

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Stapler Sorter-C1

Screen	Address	Bit	Display	Signal	Jack	Remarks
12	ST-AD 0	—	DIP switches 3,4	——	——	Hexadecimal
	ST-AD 1	—	DIP switches 1,2	——	——	
	ST-AD 2	—	Shift test switch up / down	——	——	
	ST-AD 3	—	Jumpers 1,2	——	——	
	ST-AD 4	—	Staple sensor	——	——	
	ST-AD 5	—	Reserved	——	——	
	ST-AD 6	—	Bin paper sensor	——	——	
	ST-AD 7	—	24V power supply monitor	——	——	

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6. Stapler Sorter-B2

Screen	Address	I/O	Bit	Display	Signal	Jack	Remarks
11	ST-A	I	0	Stapler door open signal	SPLOPN	J3-7	1 : Open
		I	1	Joint switch open signal	SOP	J3-5	1 : Open
		I	2	Lead cam sensor signal	LCHP	J8-2	
		O	3	ADD STAPLE LED ON signal	HKEMP	J7-10	0 : No staple
		I	4	Shift home position signal	——	——	1 : HP
		I	5	Guide bar home position signal	SGBHP	J4-6	1 : HP
		I	6	Stapling timing sensor signal	SPLACT	J7-4	
		I	7	Stapler home position signal	SPLHP	J7-1	1 : HP
	ST-B	O	0	Guide bar motor drive signal	$\overline{B}$	——	Alternates between '1' and '0' during operation
		O	1	Guide bar motor drive signal	B	——	
		O	2	Guide bar motor drive signal	$\overline{A}$	——	
		O	3	Guide bar motor drive signal	A	——	
		O	4	Guide bar motor ON signal	——	——	1 : ON
		O	5	Watchdog	——	——	
		O	6	MANUAL STAPLE LED indicator ON signal	$\overline{SPLOK}$	J7-9	0 : ON
		O	7	Stapler motor drive signal	SPLMD	J3-2	1 : ON
	ST-C	O	0	Communication signal	——	——	
		I	1	Communication signal	——	——	
		O	2	Bin shift UP signal	——	——	1 : Up
		O	3	Bin shift DOWN signal	——	——	1 : Down
		I	4	Communication signal	——	——	
		I	5	Feeder motor clock pulse	FMCLK	J8-5	
		O	6	Communication signal	——	——	
		O	7	Feeder motor drive signal	FMD	J6-2	1 : ON
12	ST-AD0	—	—	——	——	——	Hexadecimal
	ST-AD1	—	—	——	——	——	
	ST-AD2	—	—	——	——	——	
	ST-AD3	I	—	No staple detection VR	——	——	
	ST-AD4	I	—	24V monitoring	——	——	
	ST-AD5	I	—	Bin paper sensor signal	$\overline{BPD}$	J4-4	
	ST-AD6	I	—	No staple current value (high current area)	——	——	
	ST-AD7	I	—	No staple current value (low current area)	——	——	

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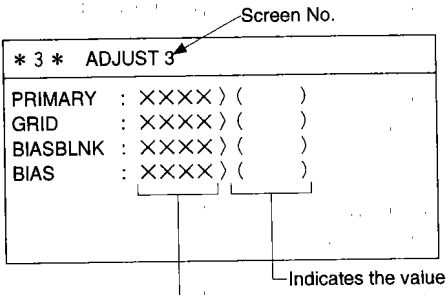
F. ADJSUT (＊3＊; adjustment mode)

- The mode allows fine-tuning or setting the back-up data needed for copying operations.
- Each press on the ▶ key brings up the next screen; each press on the ◀ key brings up the previous screen. (As many as 10 screens are available.)
- Press the item (item button on the screen) that you want to adjust or set; the item becomes highlighted when selected.
- Enter the appropriate setting using the numeric keypad.
- A press on the OK key stores the value.
- After changing any settings, record them on the Service Label.
- After operation, turn off and then on the rear main power switch.

Screen Sample


Screen No.
＊3＊ ADJUST 3
PRIMARY : XXXX) ( )
GRID : XXXX) ( )
BIASBLNK : XXXX) ( )
BIAS : XXXX) ( )
Indicates the value entered on the numeric keypad.
A press on the OK key brings in the value enclosed in the parentheses for storage.

Screen	Item	Description	Settings	Remarks
1	C1-STMTR C1-A4R	Use it to fine-adjust or enter the paper width basic setting for cassette 1.	0 to 255	
	C2-STMTR C2-A4R	Use it to fine-adjust or enter the paper width basic setting for cassette 2.	0 to 255	
	MF-A6R MF-A4R MF-A4	Use it to fine-adjust or enter the paper width basic setting for the multifeeder.	0 to 255	
2	C3-STMRT C3-A4R C4-STMTR C4-A4R C5-STMTR C5-A4R	Use it to fine-adjust or enter the paper width basic setting for cassette 3. Use it to fine-adjust or enter the paper width basic setting for cassette 4. Use it to fine-adjust or enter the paper width basic setting for cassette 5.	0 to 255	For a duplexing 2-cassette pedestal, enter under 'C4' and 'C5'.

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Screen	Item	Description	Settings	Remarks
3	PRIMARY	Use it to adjust the current of the primary corona assembly (for factory).	101 to 197	Enter the values recorded on the Service Label whenever you have replaced the image processor PCB or initialized the RAM; after the operation, be sure to turn off and then on the power switch.
	GRID	Use it to adjust the grid bias (for factory).	162 to 226	
	BIASBLNK	Use it to adjust the developing bias (DC component) for moving the scanner in reverse (for factory).	192 to 224	
	BIAS	Use it to adjust the developing bias (DC component; (for factory).	192 to 224	
4	TRN-1M	Use it to adjust the transfer current (1st side) in normal humidity condition (for factory).	100 to 150	
	TRN-1H	Use it to adjust the transfer current (1st side) in high humidity condition (for factory).	100 to 150	
	TRN-1L	Use it to adjust the transfer current (1st side) in low humidity condition (for factory).	100 to 150	
	SEP-1M	Use it to adjust the separation static eliminator current (1st side) in normal humidity condition (for factory).	20 to 150	
	SEP-1H	Use it to adjust the separation static eliminator current (1st side) in high humidity condition (for factory).	20 to 150	
	SEP-IL	Use it to adjust the separation static eliminator current (1st side) in low humidity condition (for factory).	20 to 150	
5	TRN-2M	Use it to adjust the transfer current adjustment (2nd side) in normal humidity condition (for factory).	100 to 150	
	TRN-2H	Use it to adjust the transfer current (2nd side) in high humidity condition (for factory).	100 to 150	
	TRN-2L	Use it to adjust the transfer current in low humidity condition (for factory).	100 to 150	
	SEP-2M	Use it to adjust the separation static eliminator current in normal humidity condition (for factory).	20 to 150	
	SEP-2H	Use it to adjust the separation static eliminator current (2nd side) in high humidity condition (for factory).	20 to 150	
	SEP-2L	Use it to adjust the separation static eliminator current (2nd side) in low humidity condition (for factory).	20 to 150	

Reference:

If the lower fixing roller becomes soiled often, soiling the backs of copies, increase the setting of the separation current by '10'.

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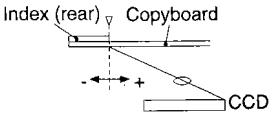
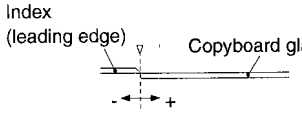
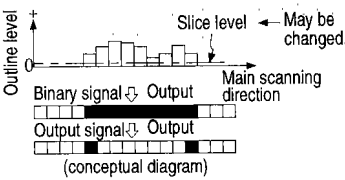
Screen	Item	Description	Settings	Remarks
6	H-ADJ	Use it to fine-tune CCD read start position (book mode) 	100 to 600	
	V-ADJ	Use it to adjust the image read start position (sub scanning direction) 	0 to 150	
	REGIST	Use it adjust the registration clutch ON timing (leading edge margin)	0 to 150	
	LAMP	Lamp ON voltage data (for factory)	0 to 255	
	GAIN	Gain from shading measurements (for factory)	0 to 255	
7	IC-DENS	Use it to adjust the slice level of the document density image create mode 	50 to 200	A higher setting increases the document read-in density slice level, thereby not reading light images.
	CST-LOOP	Use it to adjust the arching for cassette pick-up (for factory)	0 to 50	A higher setting delays the arching for multifeeder pick-up (for factory).
	MF-LOOP	Use it to adjust the arching for multifeeder pick-up (for factory)	0 to 50	
	BOOK-ERA	Use it to adjust the margin in book frame erasing mode	0 to 20 (mm)	A higher setting increases the margin.

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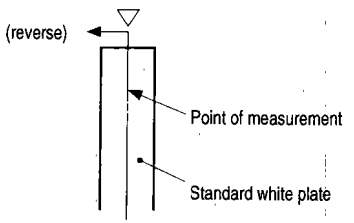
Screen	Item	Description	Settings	Remarks
7	DENS-ADJ	Use it to eliminate fogging on copies (photo) caused by copy density automatic correction	1 to 9	• Standard: 5 • A seting lower than 5 decreases fogging. • A setting of 5 or higher increases fogging.
	ADJ-S	Use it to fine-tune the points where shading correction data are taken in reference to the standard white plate. • Unit: 1/12 mm (about 0.083 mm) • White vertical lines may be noted on the copies if scratches or dirt exists on the standard white plate; if this is the case, shift the points of measurements (ADJ-S). 	1 to 32 (0 to 3mm)	
8	AE-SLOP	With some documents, the image on the copy may be too light in the AE mode; if this is the case, adjust the copy density using this mode.	1 to 9	A higher setting increases the density of the copy.

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Screen	Item	Description	Settings	Remarks
9	PPR	Standard white paper signal data	0 to 4095	If you have executed "shading adjustment for factory and R&D," record the new setting on the Service Label found behind the front door.
	W-PLT	Standard white plate signal data	0 to 4095	If you have executed "shading adjustment for factory and R&D," record the new setting on the Service Label found behind the front door.
10	DOC-STOP	Use it to adjust the document stop position for RDF-C1 (cannot be used for ADF-B1) • Standard: 8 • Unit: 0.33 mm	0 to 15	• A setting of 8 or higher shifts the document stop position to the right. • A setting lower than 8 shifts the document stop position to the left.

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G. FUNCTION (＊4＊; operation/inspection mode)

- In this mode, the machine may be operated under specific conditions or automatic adjustment may be executed; be sure that the machine is in standby state when executing any operation.
- Each press on the [▶] key brings up the next screen; each press on the [◀] key brings up the previous screen. (As many as 14 screens are available.)
- Press the item (item button on the screen) you want to operate or adjust; the item becomes highlighted upon selection.
- A press on the OK key executes the item of operation.
- A press on the [↩] key returns the Menu screen.

No.	Screen (item)	Description	Operation/Remarks
1	ERROR (OK : CLEAR)	Use it to clear E000, E001, E002, E003, or E004.	To clear an E indication, press 'ERROR' on the screen to highlight; then, press the OK key. At this time, the power switch will automatically turn off.
2	TONER-S START	Use it to stir the toner inside the developing assembly at installation.	Press 'START' on the screen to highlight it; then, press the OK key to start stirring the toner inside the developing assembly. At the same time, the reading of 'START' starts to increment (240 down; unit being seconds), and the operation stops at '0'.
3	START BALN OFST GAIN LAMP	Use it to execute automatic shading correction.	See p. 3-170
4	WHIT MEASURE (OK) DENSITY (PRINT:OK) PG MEASURE (OK) VALUE SET (OK) A= B= D= 00 00 00 00 00 00 00 00 00 00 00 00	Use it to execute automatic copy density correction.	See p. 3-171

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No.	Screen (item)	Description	Operation/Remarks
5	C1-STMRT = AD= C1-A4R = C2-STMTR = AD= C2-A4R = MF-A6R = AD= MF-A4R = MF-A4 =	Use it to store the paper width basic setting for cassette 1, cassette 2, and multifeeder.	See p. 3-175
6	C3-STMRT = AD= C3-A4R = C4-STMTR = AD= C4-A4R = C5-STMRT = AD= C5-A4R =	Use it to store the paper width basic setting for cassette feeding unit (cassette 3, cassette 4, cassette 5).	• See p. 3-175 • Store the settings for a duplexing 2-cassette feeding unit under 'C4' and 'C5'.
7	LCD-CHK (OK : START) SCAN LAMP (OK : START) DISP-LED (OK : START)	LCD-CHK • Use it to check missing dots on the LCD. SCAN LAMP • Use it to check the activation of the scanning lamp. DISP-LED • Use it to check the activation of the LEDs on the control panel.	LCD-CHK When 'LCD-CHK' is pressed and the OK key is pressed, the screen turns white; another press on the OK key causes the screen to turn black; still another press on the OK key returns the LCD-CHK screen. SCAN LAMP When 'SCAN LAMP' is pressed and the OK key is pressed, the scanning lamp turns on; a press on the OK key while the scanning lamp remains on turns off the scanning lamp. However, the error activation circuit turns on to turn off the lamp if it remains on for 30 sec or more. DISP-LED When 'DISP-LED' is pressed and the OK key is pressed, the LEDs on the control panel flashes; another press on the OK key turns off the LEDs.

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No.	Screen (item)	Description	Operation/Remarks
8	LSR-MRR (OK : START) LASER (OK : START) OFF (OK)	LSR-MRR • Use it to check the laser scanner motor operation. LASER • Use it to check the laser power.	LSR-MRR When 'SR-MRR' is pressed and the OK key is pressed, the laser scanner motor starts to rotate at a high speed; to stop it, press 'OFF' and then press the OK key. LASER Adjust the laser power whenever you have replaced the image processor PCB or the laser unit. When 'LASER' is pressed and the OK key is pressed, the laser turns on. For instructions on how to make adjustments, see p. 3-176 OFF When 'OFF' is pressed and the OK key is pressed, the laser output stops.
9	L-TEST1 (OK : START) L-TEST2 (OK : START) L-TEST3 (OK : START) L-TEST4 (OK : START) L-TEST5 (OK : START) L-TEST6 (OK : START) L-TEST7 (OK : START)	Use it to generate a test pattern.	See p. 3-160
10	IP-CHK (OK : START)	Use it to check the image processor PCB.	IP-CHK When 'IP-CHK' is pressed and the OK key is pressed, a check is made of the circuit. The result of the check is indicated by 'OK' or 'NG'; if 'NG' is indicated, replace the image processor PCB.
11	NIP (OK : START) RVRS	Use it to automatically measure the nip.	When 'NIP' is pressed and the OK key is pressed, a solid black image is automatically created and stopped at the fixing roller; about 15 sec later, the copy is delivered.

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No.	Screen (item)	Description	Operation/Remarks
12	START PPR W-PLT BALNC OFST GAIN LAMP	Shading adjustment for the factory/R&D.	See p. 3-174
13	RAM-INIT (OK : CLEAR) MMI COPY MMI FAX MMI SYSTEM MMI COMMON CORE IP ALL	Use it to initialize the RAM data.	When an item is pressed and the OK key is pressed, the respective RAM data unit is initialized. • For details, see the table below. • Be sure to turn off and then on the rear main power switch after executing the operation.
14	INSTAL ID SET	Use it to update the FLASH ROM.	See p. 3-179

Item	Description
MMI COPY	Use it to initialize the back-up data for the copier control panel. • option function • mode storage
MMI FAX	Use it to initialize the back-up data for the fax control panel. • telephone directory • program memory • The one-touch dialing numbers, abbreviated dialing numbers, and sender name will not be initialized; to initialize these item, use fax service mode.
MMI SYSTEM	reserved.
MMI COMMON	Use it to set common settings.
CORE	
IP	Use it to set the back-up data of service mode. • When executed, the rear main power switch is automatically turned off.
ALL	Use it to initialize the back-up data on the image processor PCB. • When executed, the rear main power switch is automatically turned off.

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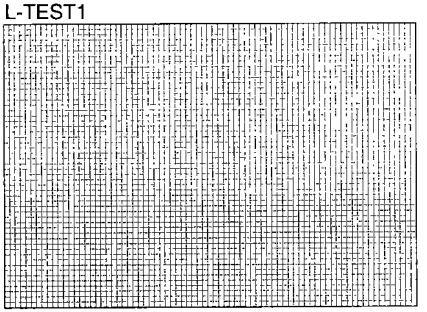
L-TEST1

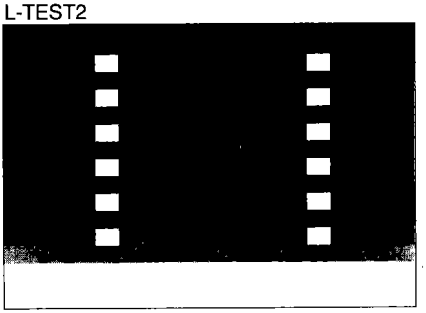


①

■ L-TEST1 (grid test print)

- Use the grid test print to check the angles between lines and straight lines. If a fault is noted, the laser beam may be displaced or the BD is faulty.

L-TEST2

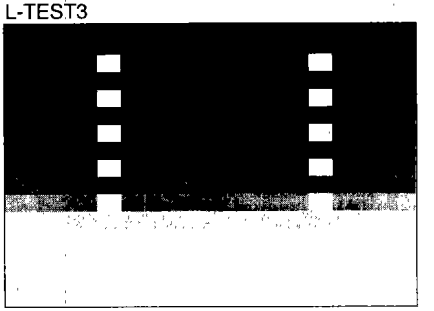


②

■ L-TEST2 (17-gradation test print 1)

- Use the 17-gradation test print 1 to check the gradation, fogging, white line, and uneven density between left and right.
- If a fault in gradation is noted, a fault in the laser system may be suspected.
- If fogging is noted, a fault in the photosensitive drum developing system or the laser system may be suspected.
- If white lines are noted, a fault in the developing system or dirt on the transfer corona wire may be suspected.
- If uneven density between left and right is noted, a fault in the height of the primary corona wire or a fault in the developing system may be suspected.
- The L-TEST2 test print is generated after density correction.

L-TEST3

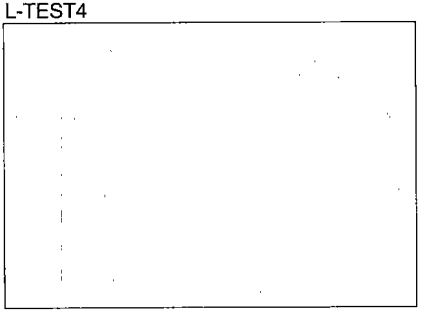


③

■ L-TEST3 (17-gradation test print 2)

- Use the 17-gradation test print 2 to check the gradation, fogging, white lines, and uneven density between left and right.
- If a fault in the gradation is noted, a fault in the laser system may be suspected.
- If fogging is noted, a fault in the photosensitive drum developing system or the laser system may be suspected.
- If white lines are noted, a fault in the developing assembly or dirt on the transfer corona wire may be suspected.
- If uneven density between left and right is noted, a fault in the height of the primary corona wire or a fault in the developing system may be suspected.
- The L-TEST3 test print is generated without density correction.

L-TEST4



④

■ L-TEST4 (white test print)

- Use the L-TEST4 test print to check fogging.
- If fogging is noted, a fault in the photosensitive drum, developing system, or laser system may be suspected.

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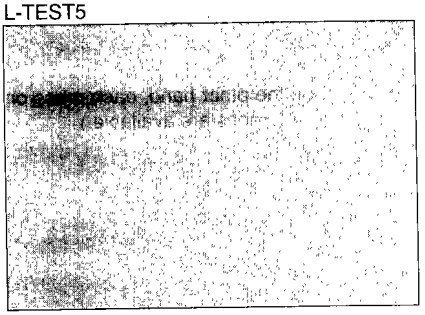
L-TEST5

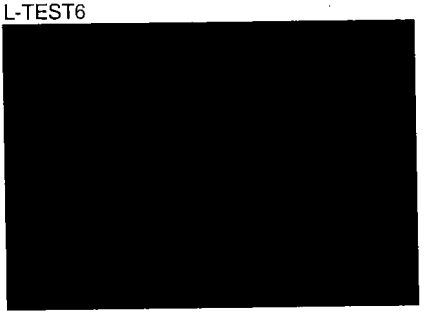


⑤

■ L-TEST5 (halftone test print)

- Use the L-TEST5 test print to check transfer failure, black lines, white lines, and uneven intervals.
- If a transfer fault (vertical white spots) is noted, dirt on the transfer corona wire may be suspected.
- If black lines are noted, scratches on the drum or dirt on the primary corona wire may be suspected.
- Suspect the following if uneven intervals are noted:
  photosensitive drum: 94mm intervals
  developing cylinder: 42mm intervals
  Uneven intervals will not be noted on the test print if the fault is in the scanner.

L-TEST6

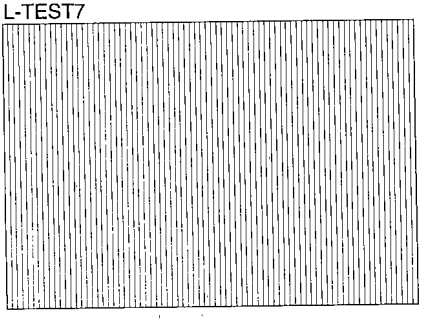


⑥

■ L-TEST6 (solid black test print)

- Use the L-TEST6 test print to check white spots or white lines.
- If white spots are noted, dirt on the transfer corona wire may be suspected.
- If white lines are noted, a fault in the developing system or dirt on the transfer corona wire may be suspected.

L-TEST7



⑦

■ L-TEST7 (straight line test print)

- Use the L-TEST7 test print to check the straight lines; a fault may be attributed to displaced laser beam or the beam detection mechanism.

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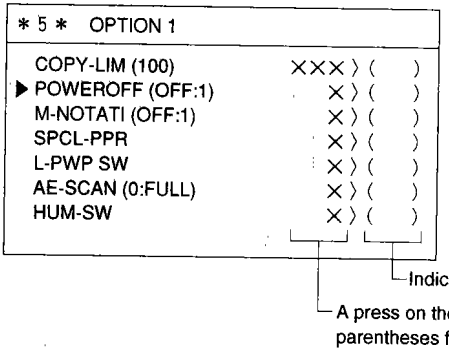
H. OPTION (*5*; machine specifications settings mode)

- In his mode, machine specifications may be set.
- Each press on the [▶] key brings up the next screen; on the other hand, each press on the [◀] brings up the previous screen. (As many as eight screens are available.)
- Press the appropriate item (item button) to highlight it.
- Enter a setting on the numeric keypad.
- A press on the OK key stores the setting.
- After the operation, turn off and then on the rear main power switch.

Screen Sample


* 5 * OPTION 1
COPY-LIM (100) XXX) ( )
▶ POWEROFF (OFF:1) X) ( )
M-NOTATI (OFF:1) X) ( )
SPCL-PPR X) ( )
L-PWP SW X) ( )
AE-SCAN (0:FULL) X) ( )
HUM-SW X) ( )
Indicates the value entered on the numeric keypad.
A press on the OK key brings in the value enclosed in the parentheses for storage.

Screen	Item	Function	Description
1	COPY-LIM	Use it to change the upper limit for the number of copies to make.	You may change the upper limit between '1' and '100'.
	POWEROFF	Use it to turn on or off the auto power-off mechanism.	You may disable the auto power-off function (2 hr).
	M-NOTATI	Use it to select size notation for the multifeeder.	
	SPCL-PPR	Use it to change the period of initial rotation (INTR).	0: may be either high-, medium-, low-, or ultra low-temperature mode. 1: always starts up in low-temperature mode (i.e., never in high- or medium-temperature mode). 2: in continuous mode, temperature control never in 200°C or less. • To improve fixing for thick paper or the like with poor fixing, set it to '2'; however, curling may become conspicuous with some types of paper (do not set it to '2' if a sorter is used).

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Screen	Item	Function	Description
1	L-PWR-SW	Use it to switch the laser output.	If the characters printed when a PS-GP unit is used are too thin, set it to '1' to thicken the characters. You must turn off and then on the power switch if you have changed the setting. The mechanism works only when printing with a PS-GP unit, and does not work in other modes of operation.
	AE-SCAN	Use it to change the distance the scanner moves forward in AE.	0: full scan 1: half scan
	HUM-SW	Use it to set the humidity sensor.	1: fixed mode, high humidity transfer/separation current output 2: fixed mode, normal humidity transfer/separation current output 3: fixed mode, low humidity transfer/separation current output When to Change the Setting Go through the following to change the setting if separation faults, dots, or vertical white spots are noted: 1) Clean the static eliminator, transfer corona wire, and transfer shielding plate; or, replace the static eliminator or the transfer corona wire. 2) If the above does not correct the problem, • set it to 'HUM-SW=2 • set it to 'HUM-SW=2'; if separation failure occurs, then, '3'. • set it to 'HUM-SW=2;if vertical white spots occur, then, '1'.
2	CST-G1 (U-5 : 0) CST-G2 (U-4 : 0) CST-G3 (U-3 : 0) CST-G5 (U-2 : 0)	Use it to change the name of U-size paper ON/OFF.	0: displays 'U2' through 'U5' if the cassette is set to 'G1' through 'G5'. 1: displays the paper size selected on the next page if the cassette is set to 'G1' through 'G5'.
	IM-ANGLE	Use it to set slant mode.	If jagged edges are noted on the copy images in slant mode, set the mode from '0' to '1'.
	WCLN-OFF	Use it to turn on or off the automatic cleaning mechanism for the corona wire.	0: on 1: off The automatic cleaning mechanism for the corona wire operates as follows:

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Screen	Item	Function	Description
3	CST G1:0:G LTR :1:K LGL	Use it to display the paper type when turning on the U-size paper name (1).	If the cassette is set to 'G1', 0: displays LTR 1: displays U
	CST G2:0:FLSC :1:OFI :2:E-OFI :3:A-LGL :4:S-OFI		If the cassette is set to G2, 0: displays FLSL 1: displays OFI 2: displays OFI 3: displays LGL 4: displays OFI
4	CST G3:0:G LGL :1:FOLI :2:A FLS		If the cassette is set to G3, 0: displays LGL 1: displays FOLI 2: displays FLSC
	CST G5:0:LTR :1:A LTR		If the cassette is set to G3, 0: displays LTR 1: displays LTR
5	DF-SIZE : 0 < (0) AB (0) INCH (1) A (2) AB/INCH (3)	Use it to set the country of installation, default ratio notation, and DF original size detection switching mode; further, enter the appropriate settings after relocating the original size sensors.	The default ratios may be set as follows: AB (0): 6R/5E INCH (1): 5R/4E A (2): 3R/3E AB/INCH (3): 6R/5E Based on the settings, the DF identifies the size of originals as AB, INCH, A, all-size. After entering the settings, be sure to turn off and on the rear power switch.

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Screen	Item	Function	Description
6	W-CLN-P	Use it to set the intervals for the activation of the automatic cleaning mechanism for the corona wire in terms of the number of copies.	Enter the appropriate number of copies to indicate how often the automatic cleaning mechanism for the primary corona assembly should be activated. settings: 100 to 2000 copies default: 2000
	W-CLN-T		Enter the appropriate number of copies to indicate how often the automatic cleaning mechanism for the transfer corona assembly should be activated. settings: 100 to 2000 copies default: 2000 copies
7	STS-D1	Use it to set whether a bin may be specified for delivery of outputs when the copier is used as a printer by connecting the Stapler Sorter-D1.	0: disable specification 1: enable specification
	PS-UNIT	Use it to set how the PS-GP unit is connected.	0: Now connect 1: connect the PS-GP unit via the Multi Device Controller 2: connect the PS-GP unit directly 3: The setting must always be '1' if the Multi Device Controller is connected
8	BAUD RATE	Use it to set the communication speed for the RS232C interface used for servicing.	0: 9600 baud 1: 19200 baud
9	SCAN-SEL	7: priority on paper size Controls the image placement with priority on the paper in the cassette. 0: priority on original size Gives priority to the size of the original read using the feeder. For this reason, the output of a non-default original may have missing images.	
	LSRMTR OFF	Not used. (reserved for the future)	
10	DATE MODE (3) YYYY MM/DD (0) MM/DD YYYY (1) DD/MM YYYY (2) NONE		The date set here will be used in the header printed on FAX messages.

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I. COUNTER (＊6＊; counter mode)

- In this mode, the screen displays the number of times the machine has operated.
- Each press on the [▶] key brings up the next screen; on the other hand, each press on the [◀] key brings up the previous screen. (As many as six screens are available.)
- A press on the [Reset] key returns the Menu screen.
- To clear the counter reading, press the item to highlight, and press the Clear key while holding down the service switch.

＊6＊ COUNTER	
▶ L-TOTAL	000000
L-MULTI	000000
L-CST 1	000000
L-CST 2	000000
L-CST 3	000000
L-CST 4	000000
L-CST 5	000000

Screen	Display	Description	Reading
1	L-TOTAL	large-size total copy counter	999999 (returns to 000000 thereafter) For L-CST1 through L-CST5 and S-CST1 through S-CST5, see the next page.
	L-MULTI	large-size copy counter (pick-up from multifeeder)	
	L-CST1	large-size copy counter (pick-up from cassette 1)	
	L-CST2	large-size copy counter (pick-up from cassette 2)	
	L-CST3	large-size copy counter (pick-up from cassette 3)	
	L CST4	large-size copy counter (pick-up from cassette 4)	
	L-CST5	large-size copy counter (pick-up from cassette 5)	
	L-OVRLY	large-size copy counter (2nd side of overlay copy)	
	L-2-SIDE	large-size copy counter (2nd side of two-sided copy)	
	L-DF	large-size original counter	
2	S-TOTAL	small-size total copy counter	
	S-MULTI	small-size copy counter (pick-up from multifeeder)	
	S-CST1	small-size copy counter (pick-up from cassette 1)	
	S-CST2	small-size copy counter (pick-up from cassette 2)	
	S-CST3	small-size copy counter (pick-up from cassette 3)	
	S-CST4	small-size copy counter (pick-up from cassette 4)	
	S-CST5	small-size copy counter (pick-up from cassette 5)	
	S-OVRLY	small-size copy counter (2nd side of overlay copy)	
	S_2_SIDE	small-size copy counter (2nd side of two-sided copy)	
	S_DF	small-size original counter	
3	SERVICE1	service counter	

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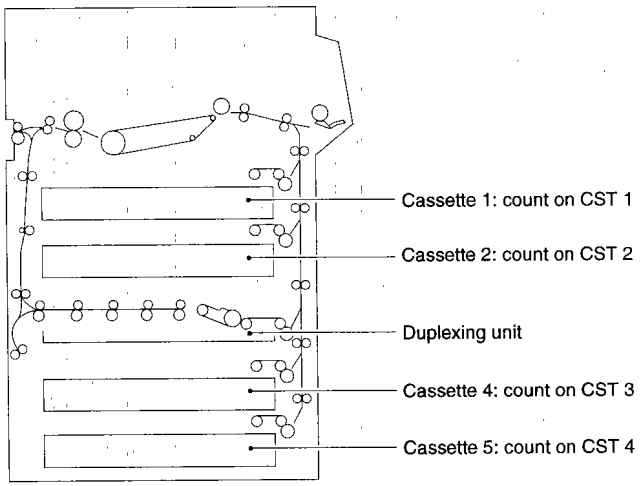
Screen	Display	Description	Reading
3	SERVICE2	Service counter 2	999999 (thereafter, returns to 000000)
	WEB	Cleaning belt solenoid activations	
	TOTALPWR	Total amount of time during which machine remained powered (in hours)	
	MDCPRNTL	Large size print counter by Multi Device Controller	
	MDCPRNTS	Small size print counter by Multi Device Controller	
4	SCANSYCL	Total number of scans made by scanner	
	MDC-SCAN	Number of scans made by scanner by Multi Device Controller	

■ In the case of the Cassette Feeding Unit with Duplexing-G1, CST3 represents the count for cassette 4, and CST4 represents the count for cassette 5.



■ Cassettes and Counters

Counter	Copier only	Copier + G1	Copier + A1	Copier + H1	Copier + F1
CST 1	Cassette 1	Cassette 1	Cassette 1	Cassette 1	Cassette 1
CST 2	Cassette 2	Cassette 2	Cassette 2	Cassette 2	Cassette 2
CST 3	——	Cassette 4	——	Cassette 3	Cassette 3
CST 4	——	Cassette 5	——	——	Cassette 4
CST 5	——	——	——	——	Cassette 5

The count for Paper Deck Pedestal-H1 and Paper Deck Pedestal with Duplexing-G1 is displayed under the item CST3.

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H. Adjustment

1. After Replacing Major Parts

Parts	Service mode	Steps
• Drum unit • HVT unit	• [*][4][*] <SHADING> • [*][4][*] <DENSITY>	1) Execute 'SHADING' in service mode ([*][4][*]). (See p. 3-170.) 2) Execute 'DENSITY' in service mode ([*][4][*]). (See p. 3-171.)
• Image processor PCB (before replacement)		1) Print out all data stored on the PCB; one-touch dial numbers, abbreviated dialing numbers.
• Image processor PCB (after replacement	• [*][4][*] <RAM INIT> • [*][3][*] • [*][4][*] <LASER> • [*][4][*] <SHADING> • [*][4][*] <DENSITY> • [*][4][*] <DF-SIZE> • [*][4][*] <SIZE-DET>	1) Install the image processor PCB. 2) Select 'RAM INIT' in service mode ([*][4][*]), and press the [OK] key. 3) Activate service mode ([*][3][*]), and enter the appropriate settings according to the Service Label. 4) Adjust the laser intensity. (See p. 3-176.) 5) Execute 'SHADING' in service mode ([*][4][*]). (See p. 3-170.) 6) Execute 'DENSITY' in service mode ([*][4][*]). (See p. 3-171). 7) Select 'DF-SIZE' in service mode ([*][5][*]), and select the size of the paper to be used. • This also changes the default ratio notation. 8) Select 'SIZE-DET' in service mode ([*][5][*]), and set it to suit the machine's original size detection specification.
• Laser unit • Laser unit	• [*][4][*] <LASER> • [*][4][*] <SHADING> • [*][4][*] <DENSITY>	1) Select 'LASER' in service mode ([*][4][*]); and using the laser power checker, adjust the laser power. (See p. 3-176.) 2) Execute 'SHADING' in service mode ([*][4][*]). (See p. 3-170.) 3) Execute 'DENSITY' in service mode ([*][4][*]). (See p. 3-171.)
• CCD unit	• [*][4][*] <SHADING>	1) Execute 'SHADING' in service mode ([*][4][*]). (See p. 3-170.)

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Parts	Service mode	Steps
• Analog processor PCB • Scanning lamp • Lamp regulator • Lamp reflecting plate	• [*][4][*] <SHADING>	1) Execute 'SHADING' in service mode ([*][4][*]). (See p. 3-170.)
Cleaning belt	• [*][6][*] <WEB>	1) Select 'WEB' in service mode ([*][6][*]); while holding down the service switch, press the Clear key (C). • The counter returns to '000000'.
Standard white plate	• [*][4][*] <SHDG R&D>	1) Execute 'SHADING for factory/R&D' in service mode ([*][4][*]). (See p. 3-174.)

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2. Automatic Shading Correction

Execute the mode under any of the following conditions:

- when replacing the image processor PCB
- before executing 'copy density automatic correction' in service mode (✱4✱)
- after executing 'RAM-INIT' in service mode (✱4✱)
- when replacing the lamp regulator
- when replacing the laser unit
- when replacing the laser scanner unit
- when replacing the CCD unit
- when replacing the drum unit
- when replacing the drum unit
- when replacing the HVT unit
- when replacing the analog processor PCB

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service mode switch with hex key.
3) Press the ⊛ key once.
4) Press 'FUNCTION' (✱4✱) on the Menu screen to highlight the item; then, press the OK key.
5) Select the Shading screen (Figure 3-1004) using the ▶ key. (3rd screen)

✱4✱ FUNCTION 3	
START	
BLNC	H
OFST	H
GAIN	H
LAMP	H

Figure 3-1004 Shading Screen

6) Press 'START' on the control panel screen to make sure that the item has been highlighted; then, press the OK key.
   - The machine executes automatic correction. (about 3 min)
   - During adjustment, the items become highlighted at random; the adjustment is over when highlighting stops.

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3. Copy Density Automatic Correction

Use the mode when correcting the following three:

- changes in the sensitivity of the drum
- developing bias/grid bias

Use this mode under any of the following conditions:

- when replacing the laser unit
- when replacing the HVT unit
- when replacing the drum unit
- every 30,000 copies
- when noting image faults
- at time of installation
- when replacing the image processor PCB

Be user to set the whitest of all copy papers used in cassette 1 (A4 orientation).

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service mode switch with a hex key.
3) Press the ⊛ key once.
   - The Service Mode Menu screen appears.
4) Press 'FUNCTION' (＊4＊) to highlight the item; then, press the OK key.
5) Select the Shading screen using the ▶ key. (3rd screen)

＊4＊ FUNCTION 3
START
BLNC
OFST
GAIN
LAMP

Figure 3-1005

6) Press 'START' to highlight the item; then, press the OK key.
   - Shading adjustment begins.
   - For details, see the descriptions on shading.
7) When shading is over, press the Reset key; then, with the RF (or copyboard cover) open, make two solid black copies.
8) Press the ⊛ key once.
   Press 'FUNCTION' (＊4＊) from among the menu items, and press the OK key.
9) Select the Density Automatic Correction screen by pressing the ▶ key. (4th screen)

＊4＊ FUNCTION 4						
WHITE MEASURE (OK)						
DENSITY (PRINT:OK)						
PG MEASURE (OK)						
VALU SET (OK)						
A=		B=			D=	
00	00	00	00	00	00	00
00	00	00	00	00	00	

Figure 3-1006

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10) Place a blank sheet of copy paper on the copyboard as shown in Figure 2-38, and close the copyboard cover.

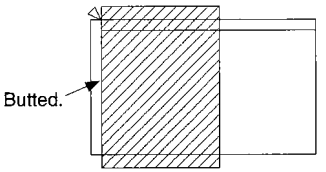
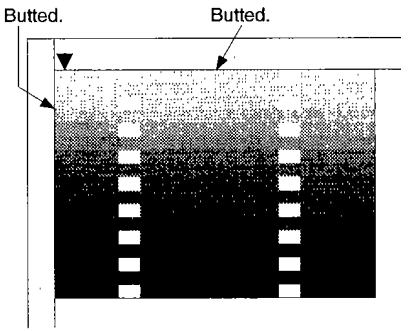


Figure 3-1007

11) Press 'WHITE MEASURE' to highlight the item, and press the OK key.
- The scanner makes a single scan.
- After operation, the item becomes de-highlighted.

12) Remove the copy paper from the copyboard glass.
13) Press 'DENSITY' to highlight the item, and press the OK key.
- The copier generates a test pattern (15 gradations, A4).

14) Place the test pattern generated in step 13) on the copyboard glass.



Test Pattern (image face down)

Figure 3-1008

15) Press 'PG MEASURE' to highlight the item, and press the OK key.
- The scanner makes 13 scans.
- After the operation, the item becomes de-highlighted.

16) After the operation, make sure that the settings of A, B, and D on the control panel screen are as specified; if not, go back to step 3) to make sure you have gone through the steps correctly. If the settings are as follows, go to the next step.
- $8 \leqq A \leqq 25$
- $-30 \leqq B \leqq 30$
- $0 \leqq D \leqq 8$

Reference:

The values given for A, B, and D are for reference only, and optimum images may be obtained even when the values are not as indicated. You may assume that the machine is in good condition if optimum images are obtained even if the values are not as specified, omitting the temporary remedies that follow.

17) Press 'VALUE SET' to highlight the item, and press the OK key.
- The values that have been automatically measured will be stored.

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If the values of A, B, and D are not as specified after executing 'copy density automatic correction' several times and an optimum image still cannot be obtained, you may provide the following temporary remedy:

Press 'VALUE-SET', and press the Clear key to set A, B, and D to their standard values.

The above remedy will enable normal copying; however, since the copy quality in photo mode tends to lower, it is important to correct the fault (see below) and execute 'copy density automatic density correction' once again.

■ Parts to Suspect
- drum unit
- primary corona assembly
- scanning lamp
- lamp regulator
- laser unit
- HVT
- analog processor PCB
- image processor PCB

4. Correcting Fogging

If, as a result of performing the Image Adjustment Basic Procedure, fogging is noted in white areas, go through the following:

1) Select 'DENS-ADJ' (7th screen) in service mode ([*][3][*]), and press 'DESN-ADJ'.
2) Set the value of 'DENS-ADJ' to a value lower than '5' (standard); then, press the [OK] key.

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5. Shading Adjustment for the Factory/ R&D

You must go through the following whenever you have replaced the standard white plate:

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service mode switch with a hex key.
3) Press the * key.
4) Press 'FUNCTION' (*4*) on the screen to highlight it.
5) Press the OK key.
6) Press the ▶ key to select the R&D/ Factory Shading Adjustment screen (12th screen).

4 FUNCTION 12		
START		
PPR	:	H
W-PLT	:	H
BALN	:	H
OFST	:	H
GAIN	:	H
LAMP	:	H

Figure 3-1009

7) Place about 10 sheets of standard white paper (FY9-3004) on the copyboard glass.

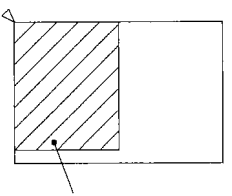

Figure 3-1010

8) Press the START' on the control panel screen, and make sure that the item has been highlighted; then, press the OK key.
   - The machine will execute automatic adjustment. (about 3 min)
   - During the operation, the items become highlighted at random; the operation ends when all items become de-highlighted.

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6. Storing the Paper Width Basic Setting

Go through the steps under any of the following conditions:

- after replacing the paper width detecting VR of the copier or the cassette feeding unit (including the multifeeder)
- after adjusting the left/right registration

1) Replace the paper width detecting VR.
2) Open the front door, and insert the door switch actuator into the door switch assembly.
3) Press the service mode switch with a hex key.
4) Press the ⊛ key.
5) Press 'FUNCTION' (＊4＊) on the screen to highlight the item.
6) Press the OK key.
7) Press the ▶ key to select the Paper Width Basic Setting Input screen (5th and 6th screens).

＊4＊ FUNCTION 5		
C1-STMTR	=	AD =
C1-A4R	=	
C2-STMTR	=	AD =
C2-A4R	=	
MF-A6R	=	AD =
MF-A4R	=	
MF-A4	=	

Figure 3-1011

8) Press the item representing the appropriate cassette to highlight the item.
   - AD: output value of the paper width detecting VR
   - C1 through C5: cassettes 1 through 5 (C1 being the topmost cassette)
   - MF: multifeeder
   - STMTR: represents configuring the paper width guide plate to STMT-R
   - A4R: represents configuring the paper width guide plate to A4R
   - A6R: represents configuring the paper width plate to A6R
   - A4: represents configuring the paper width guide plate to A4
9) Slide out the appropriate cassette, and set the paper width guide plate inside the cassette to 'STMT-R'.
10) Insert the cassette.
11) Check that the AD setting has appeared on the control panel.
12) Press the OK key to store the AD setting under 'STMTR'.
13) Slide out the cassette, and set the paper width guide plate to A4R; then, insert the cassette.
14) Check that the AD setting for A4R has appeared on the control panel screen.
15) Press 'A4R' to highlight the item; then, press the OK key to enter the AD setting under 'A4R'.

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16) Turn off and then on the rear main power switch.
If you are replacing the image processor PCB, you need not perform this adjustment; simply, enter the value recorded on the Service Label in service mode (✱3✱).

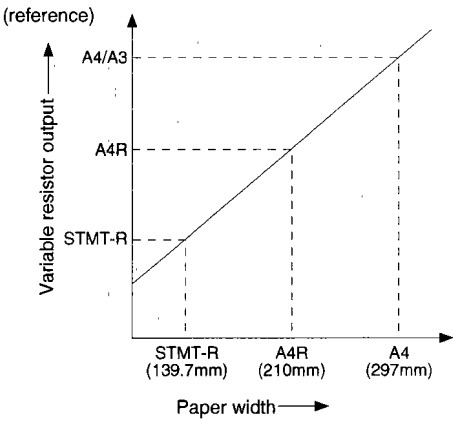

Figure 3-1012

Caution:
1. For the replacement of the paper width detecting VR of the multi-feeder, the width of A6R is used as one of the basic values; you must be careful, however, that no notation is given for A6R on the size label and you will not feel a click when sliding the width guide.
Keep in mind that A6R is what you obtain by folding a sheet of A4 in fours.
2. For a duplexing 2-cassette feeding unit, enter the values under 'C4' and 'C5'.

7. Adjusting the Laser Intensity

You must make the adjustments under any of the following conditions:
① after replacing the laser scanner unit
② after replacing the image processor PCB
③ when noticing lowering of the laser power

a. Tools Needed
- Laser Power Checker (F9-4008-000)
- Digital Multimeter (FY9-2002-000)

b. Making Adjustments
1) Turn off the rear main power switch.
2) Remove the copyboard glass.
3) Remove the rear cover.
4) Remove the screw, and remove the laser power checker slot cover (inside).

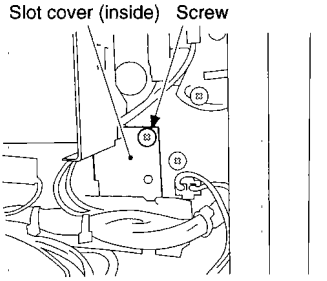

Figure 3-1013

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5) Hold the hook on the laser power checker slot cover (outside), and remove the slot cover.

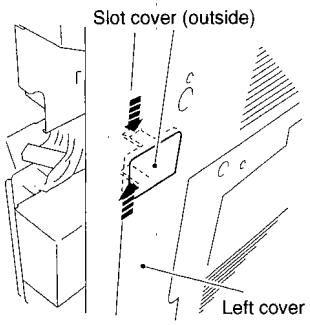

Figure 3-1014

6) Set the laser power switch to position '2'.

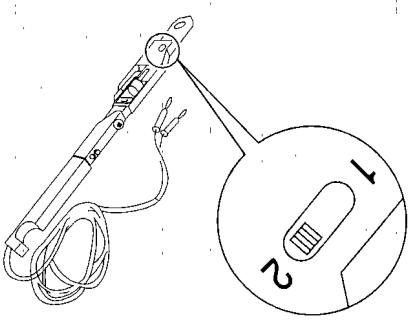

Figure 3-1015

7) Insert the Laser Power Checker as shown in Figure 2-47 through the checker slot until it stops.

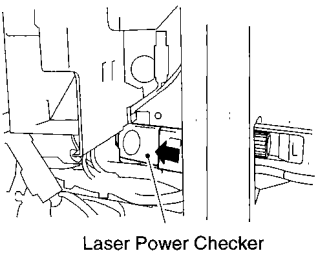

Figure 3-1016

8) Connect the probes of the Laser Power Checker to the Digital Multimeter, and set the range to '200mVDC'.
9) Open the front door, and insert the door switch actuator into the door switch assembly; then, turn on the rear main power supply switch. Thereafter, while turning on the scanner safety switch (SW3), turn on the control panel power switch. (You may turn off the scanner safety switch when the scanner has returned to the home position.)

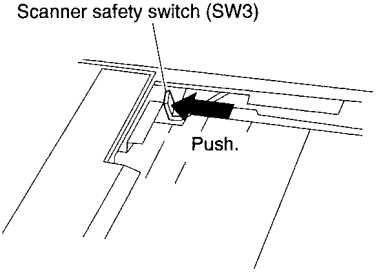

Figure 3-1017 (copyboard rear left)

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10) Press the service switch with a hex key.
11) Press the ⊛ key.
12) Press 'OPTION' (＊5＊) on the screen to highlight the item.
13) Press the OK key.
14) Check that the value of 'L-PWR-SW' is '0'.
15) Press the ↺ key.
16) Press 'FUNCTION' (＊4＊) on the screen to highlight the item.
17) Press the ▶ key to select the Laser Adjustment screen.

＊4＊ FUNCTION 8
LSR-MRR (OK:START)
LASER (OK:START)
OFF (OK)

Figure 3-1018 Laser Adjustment Screen

18) Press 'LASER' to highlight the item.
19) Press the OK key.
20) Turn VR1202 on the laser driver PCB so that the reading of the digital multimeter is '21.5mV'.
    • VR1202 is found on the rear left of the lens mount. (See Figure 3-1019.)

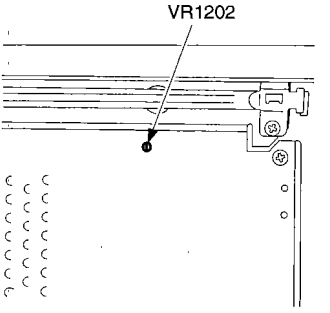

Figure 3-1019

21) Press the OFF key on the screen, and press the OK key to stop the laser output.
22) Turn off the rear main power switch; then, after installing the covers, turn on the rear main power switch and the control panel power switch to complete the steps.

Reference:
• Conceptual Graph (laser adjustment)

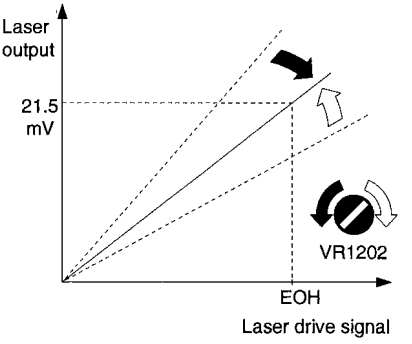

Figure 3-1020

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8. Upgrading the FLASH ROM

What is meant by upgrading the FLASH ROM is upgrading of the FLASH ROMs (IC862, IC863) on the image processor.

This method, however, does not apply to the following ROMs, and they require physical replacement:

- image processor PCB (IC848)
- DC controller PCB (IC211)

You will need the following tools when upgrading the FLASH ROM:

- upgrading program and a personal computer containing the program for upgrading to the new version
- RS232C cable (D-Sub 9-pin female connector)

1) Remove the connector cover ① from the rear cover.
   - The RS232C (9-pin) interface connector will come into view.

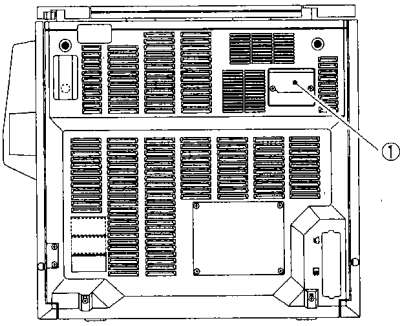

Figure 3-1021

2) Open the front door, and insert the door switch actuator into the door switch assembly.
3) Press the service switch, and press the * key.
4) Press 'FUNCTION' (＊4＊) on the screen to highlight the item.
5) Press the [OK] key.
6) Press the [▶] key to select the Upgrading screen.

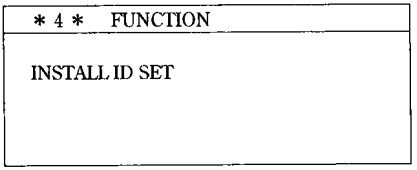

Figure 3-1022

7) Press 'INSTALL ID SET' on the screen to select the item.

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8) Press the OK key.
   - This will automatically turn off the rear main power switch.
9) Turn on the rear power supply switch.
   - The screen will change to display the following:

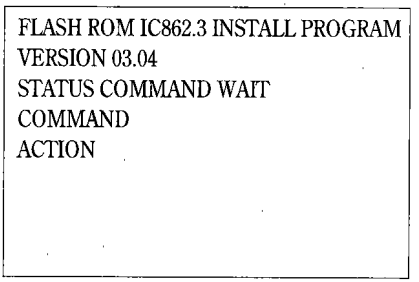

Figure 3-1023

   - The notation 'VERSION' here represents the current version number.
10) Connect the copier with the personal computer with an RS232C cable.
11) By operating the personal computer, update the program in FLASH ROM.
   - For instructions on how to operate the personal computer, refer to the instructions sheet that comes with the program.
12) Check that the copier's screen displays the check sum to indicate that the upgrading operation has ended.
   - The check sum also appears on the screen of the personal computer; check the check sum on the personal computer.

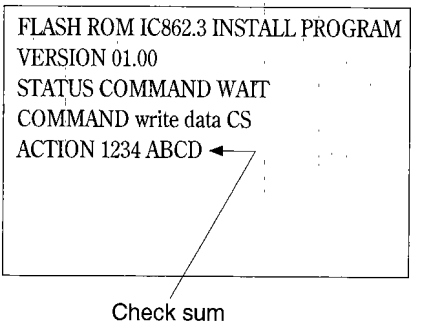

Figure 3-1024

13) Disconnect the cable.
14) Turn off the rear main power switch.
15) Turn on the rear power switch, and make sure that the program of the FLASH ROM has been updated using 'DISPLAY' in service mode (*1*).

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9. Checking the Photointerrupters

In addition to using a meter, the copier's photointerrupters may be checked using its service mode.

① Using a Meter

1) Set the range of the tester to '12VDC'.
2) Connect the - probe of the meter to CP202 (GND) on the DC controller.
3) Make a check:
   1: 5V | 0: 0V

② Using Service Mode

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service switch.
3) Press the ⊛ key.
4) Press 'I/O DISPLAY' (∗2∗) on the screen to highlight the item.
5) Press the OK key.
6) Press the ▶ key to select the screen that shows the address you want.

a. Copier

Photointerrupter	PS 1	PS 2	PS 3
Function	Vertical path roller 2 paper sensor (PDP1)	Cassette 2 paper sensor (C2PD)	Cassette 2 lifter position sensor (MFID)
+ probe	J210-A6	J210-B2	J210-B5
Service mode	DC PC2-1	DC PB2-6	DC PB2-5
Checks (normal if as indicated)	Open the right door while in standby, and move up the lever of PS1: • when moved up, '1'.	Slide out the cassette 2 while in standby: • when slid out, '0'. • when slid in with paper inside, '1'.	Slide out the cassette 2 while in standby: • when slid out, '0'. • when slid in, '1'.
Photointerrupter	PS 4	PS 5	PS 6
Function	Vertical path roller 1 paper sensor (PDP2)	Cassette 1 paper sensor (C1PD)	Cassette 1 lifter position sensor (C1LTP)
+ probe	J209-A2	J209-A5	J209-A8
Service mode	DC PC2-0	DC PB2-7	DC PC2-4
Checks (normal if as indicated)	Open the right door while in standby, and move up the lever of PS4: • when moved up, '1'.	Slide out the cassette 1 while in standby: • when slide out, '1'. • when slid in with paper inside, '1'.	Slide out the cassette 1 while in standby: • when slid out, '0'. • when slid in, '1'.

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Photointerrupter	PS 7	PS 8	PS 9
Function	Right door open detection (PDOP)	Pre-registration roller paper sensor (PDP3)	Multifeeder paper sensor (MFID)
+ probe	J209-A11	J204-A12	J204-A2
Service mode	DC PB2-4	DC PC2-2	DC PB2-3
Checks (normal if as indicated)	Open the right door while in standby: • when open, '0'.	Open the right door while in standby, and insert copy paper over the paper guide plate: • when inserted, '0'.	Place copy paper on the multifeeder paper tray while in standby: • when placed, '0'.
Photointerrupter	PS 10	PS 11	
Function	Delivery sensor (PDP5)	Separation sensor (PDP4)	
+ probe	J207-A7	J205-A6	
Service mode	DC PC2-5	DC PC2-3	
Checks (normal if as indicated)	Insert copy paper over the delivery sensor assembly: • when inserted, '0'.	Move the separation sensor lever by hand: • when moved down, '0'.	
Photointerrupter	PS 13	PS 14	PS 18
Function	Scanner home position sensor (SCHP)	Original leading edge sensor (SCDP)	Copyboard cover open/closed sensor (CBCC)
+ probe	J814-3 (IP)	J814-5 (IP)	J806-B8 (IP)
Service mode	IP PC2-4	IP PC2-5	CORE P7-7
Checks (normal if as indicated)	Press the Copy Start key: • changes from '1' to '0'.	Move the scanner slowly by hand while in standby: • changes from '1' to '0'. (Do not touch the lamp terminals.)	Open the copyboard cover while in standby: • when opened, '0'.

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XI. SELF DIAGNOSIS

The microprocessor on the machine's DC controller PCB is equipped with a self diagnosis mechanism that checks the condition of the machine; when it identifies an error, it will display a code on the message display on the control panel to indicate the presence of an error.

A. Copier Self Diagnosis

Code	Cause	Description
E000	• Thermistor (TH1; poor contact, open circuit) • SSR (faulty) • Controller PCB (faulty)	• The output of TH1 does not reach 40°C after power on; see Notes 1 and 2. • The output of TH1 does not change for 7 min after power-on (because of a disconnected connector).
E001	• Thermistor (TH1; short circuit) • SSR (faulty) • Controller PCB (faulty)	The output of TH1 exceeds 230°C; see Notes 1 and 2.
E002	• Thermistor (TH1; poor contact, open circuit) • Heater (H1; open circuit • Thermal switch (TS1; activation) • SSR (faulty) • Controller PCB (faulty)	• The timing at which detection is made varies depending on how the surface temperature of the fixing roller rises; however, it may be varied (200V model only) in service mode (✱ 5 ✱ ; 'SPCL-PPR').
E003		The output of TH1 falls 150°C or below after the fixing temperature has reached a specific level; see Notes 1 and 2.

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Code	Cause	Description
E004	• SSR (short circuit) • Heater (H1; open circuit) • Thermal switch (TS1; activation)	• A short circuit in the SSR is detected while the heater is off immediately after power-on. • A short circuit in the SSR is detected while the heater is off and the temperature is 200°C or more.
E010	• Main motor (M1; faulty) • Motor driver PCB (faulty) • DC controller PCB (faulty)	• The speed signal remains '0' for 3 sec after the main motor drive signal has been generated.
E030	• Counter (CNT1; open circuit) • DC controller PCB (faulty)	• A check is made immediately before the counter turns on and off. (Normal if the counter drive signal is '0' when the counter turns on; normal if the signal is '1' when the counter turns off.)
E060	• Primary corona wire cleaner sensor (faulty) • Primary corona cleaner motor (faulty) • DC controller PCB (faulty)	• The scanner does not reach the rear switch within 30 sec after it has left the home position switch. • The scanner does not return to the home position within 30 sec after it has reached the rear switch.
E063	• Transfer corona wire cleaner sensor (faulty) • Primary corona wire cleaner motor (faulty) • DC controller PCB (faulty)	
E100	• Laser unit (faulty) • BD mirror (faulty) • Optical fiber (faulty) • Laser driver PCB (faulty) • Image processor PCB (faulty) • DC controller (faulty)	• The BD signal is not generated within 2 sec after the laser has turned on. • The interval of the BD signal has a discrepancy.
E110	• Laser scanner motor (M3; faulty) • Laser scanner driver PCB (faulty) • DC controller PCB (faulty)	• The laser scanner motor does not reach a specific speed within 2 sec after the Copy Start key has been pressed. • The laser scanner motor speed has deviated after it has reached a specific speed.
E121	• Laser cooling fan (FM3; faulty) • DC controller PCB	• The laser cooling fan stop signal has occurred five times.
The control panel keys become locked; see Figure 3 (E202)	• Scanner home position sensor (PS16); faulty) • Scanner motor (M2; faulty) • Motor driver PCB (faulty) • Image processor PCB (faulty)	• The scanner does not return to the home position after it has started to move. • The power is turned off without the scanner being at the home position after removal of the copyboard glass.

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Code	Cause	Description
E203	• Scanner motor (M2; faulty) • Scanner cable (faulty) • Motor driver PCB (faulty) • Image processor PCB (faulty)	• The constant speed signal is not received from the motor driver for 0.2 sec when the scanner motor drive signal is being generated.
The control panel keys become locked; Note 3 (E204)	• Scanner original leading edge sensor (PS14; faulty) • Motor driver PCB (faulty) • Image processor PCB (faulty)	• The scanner original leading edge signal is not generated after the scanner has started moving forward. • The power is turned on while the scanner is at the home position after removal of the copyboard glass.
E220	• Scanning lamp • Lamp regulator • Image processor PCB (faulty)	The scanning lamp has remained on for 60 sec or more, activating the relay in the lamp regulator.
E700	• Image processor PCB (faulty) • DC controller PCB (faulty)	• An error has occurred in the communication between the image processor PCB and the DC controller PCB.
E710	• DC controller PCB (faulty)	• IC214 on the DC controller PCB cannot be initialized at power-on.
E711	• DC controller PCB (faulty)	• IC214 on the DC controller PCB went out of order after power-on.
E712	Feeder Error • RF controller PCB (faulty) • Connector (poor contact) • 24V power supply (faulty)	• The communication IC on the RF controller PCB went out of order.
E716	Cassette Feeding Unit Error • Cassette controller PCB (faulty) • Connector (poor contact) • 24V power supply (faulty)	• The communication IC (IC102) on the cassette feeding controller PCB went out of order.
E800	• Auto power-off (open circuit) • DC controller	• An open circuit for the auto power-off mechanism has been identified. • The auto power-off signal has been generated twice or more within 2 sec.
E804	• Power supply cooling fan (FM5; faulty) • DC controller PCB (faulty)	• The power supply cooling fan stop signal has been disrupted for 5 sec.
E805	• Exhaust fan (FM2; faulty) • DC controller PCB (faulty)	• The exhaust fan stop signal has occurred five times.

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Note 1:

To reset after self diagnosis has been activated, rear main power switch the copier OFF and then ON.

This, however, does not work for E000, E001, E002, E003, or E004; to reset, select 'ERROR' in service mode (6th page; [*][4][*]), and press [OK].

This consideration is made to prevent the user from carelessly resetting the copier when the thermistor may have an open circuit; an open thermistor, if left unattended, can overheat the rollers in the fixing assembly and damage them.

Note 2:

When an error associated with E000, E001, E002, or E003 is identified, the copier suspends the fixing heater and forces itself off in about 20 seconds.

In the case of E004, the copier will force itself off in about 2 seconds.

Note 3:

E202 or E204 may be checked under 'ERR' in service mode ([*][1][*]).

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B. Cassette Feeding Unit

Code	Cause	Description
E901	• Feeding unit motor (M1; faulty) • Feeding unit controller PCB (faulty)	• The motor clock signal is input within 1 sec after the feeding unit motor drive signal has been generated.
E902	• Paper guide plate home position sensor (PS5; faulty) • Paper guide plate drive motor (faulty) • Feeding unit controller PCB (faulty)	• Home Position Sensor OFF The home position sensor signal is not generated after the paper guide plate drive motor has been driven for 1200 pulses (toward home position). • Home Position Sensor ON The home position signal does not go OFF after the paper guide plate drive motor has been driven for 100 pulses (toward out of home position).

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C. RDF Self Diagnosis

Code	Cause	Description
E400	• Data communication with copier	• The communication is monitored at all times; the error is identified when communication with the copier is absent for 5 sec or more.
E401	• Pick-up motor (does not rotate) • Pick-up roller sensor (faulty)	• A flag is attached to the spindle of the pick-up motor, and the rotation of the pick-up motor is monitored in reference to the blocking by the pick-up roller sensor. The error is identified if the sensor (S3) does not go ON and OFF twice or more within 1 sec.
E402	• Belt motor (does not rotate) • Belt motor clock sensor (faulty)	• The belt clock pulses within 200 ms are below the specified value.
E403	• Feeder motor (does not rotate) • Feeder motor clock sensor (faulty)	• The feeder motor clock pulses within 200 ms are below the specified value.
E404	• Delivery motor (does not rotate) • Delivery motor clock sensor (faulty)	• The delivery motor clock pulses within 200 ms are below the specified value.
E411	• Document detection (faulty) • Registration sensor (faulty) • Document edge sensor (faulty)	• The sensor output is 2.3 V or more in the absence of paper.

Note:
To reset after self diagnosis, switch the copier OFF and then ON.
You can still make copies even while the RDF is out of order; open the RDF, and place the document on the copier's copyboard glass.

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D. Sorter Self Diagnosis

Code	Cause	Description
E500	• CPU on sorter controller or communication IC (faulty)	• An error is identified in the communication between sorter and copier.
E510	• Feeder motor (does not rotate)	• The clock signal from the motor is absent for 250 ms or more.
E530	• Stapler guide bar swing motor (does not rotate)	• The home position sensor does not go OFF after 2560 pulses of the motor drive signal have been generated.
E531	• Stapler unit vibration motor (does not rotate)	• The stapler unit swing sensor does not go OFF within 500 ms after the motor drive signal has been generated. The sensor does not go ON once again within 1000 ms after the stapler unit swing sensor has gone OFF.
E540	• Bin shift motor (does not rotate)	• The lead cam home position sensor does not go OFF within 2000 ms after the motor drive signal has been generated. The sensor does not go ON within 2000 ms after the lead cam home position sensor has gone OFF.
E541	• Bin motor (faulty) • Lead cam drive gear (faulty mounting)	• The lead cam position sensor does not go ON within 1.0 sec after the lead cam position sensor has gone OFF.

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■ Resetting the Errors

1. While Making Copies

① The copier displays the JAM message.

② When the copier has been reset for a jam, it displays the TURN OFF AND ON THE POWER message.

③ When the copier has been turned off and on, it runs a self check: if the result is good, the error is reset; if not good, it enters down state*, indicating 'E5XX' on its control panel.

2. While Not Making Copies

① The copier displays the TURN OFF AND ON THE POWER message.

② When the copier has been turned off and on, it runs a self check: if the result is good, the error is reset; if not good, it enters down state*, indicating 'E5XX' on its control panel.

3. When the copier enters down state,

① it indicates 'E5XX'.

② It may be used to make copies after detaching the sorter** as long as the mode does not require the use of the sorter.

- The machine resets itself if the result of its self-check is good in down state; switch off and then on the machine to initiate the self-check after detaching the sorter from the copier.

* State in which an error code (E) is indicated.

** Turn off the joint sensor, and disconnect the connector.

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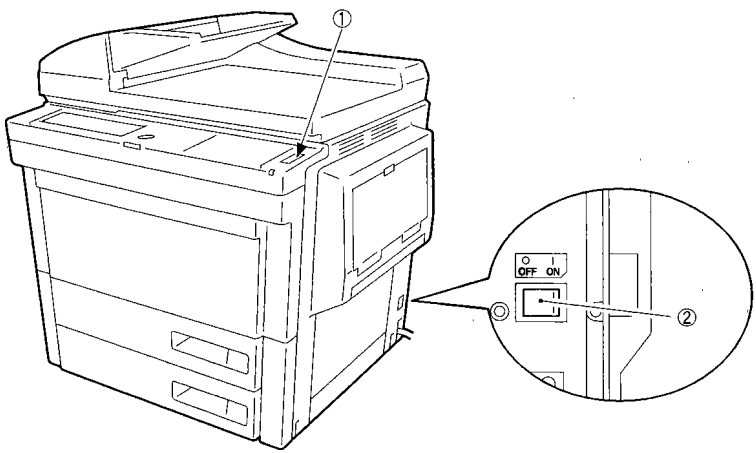
I. POINTS TO NOTE BEFORE WORK

A. Rear Power Switch and Others

Before starting disassembly/assembly work, turn off the rear power switch and disconnect the power plug. In addition, keep the following in mind.

1. You must turn off the rear power switch since turning off the control panel power switch will not cut off power to some units.
2. Keep in mind that the power will not be cut when you open the front door if both the control panel power switch and the rear power switch remain on.



① Control panel power switch ② Rear main power switch

Figure 4-101

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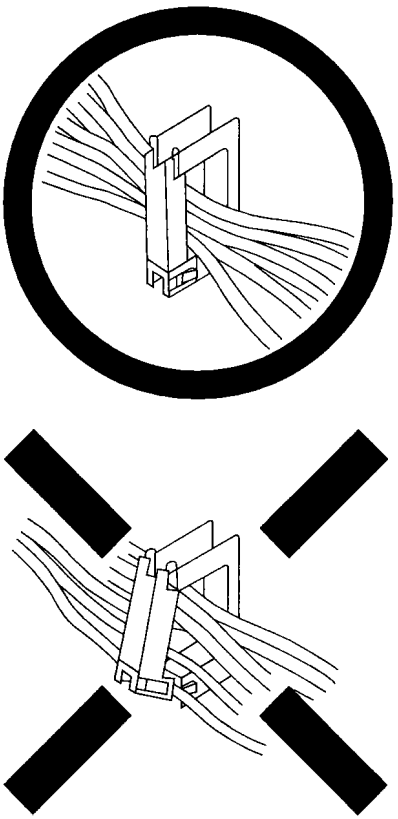
B. Harnesses

Take care not to trap any harness when trying to keep it in place using a retainer.



No Good

Figure 4-102

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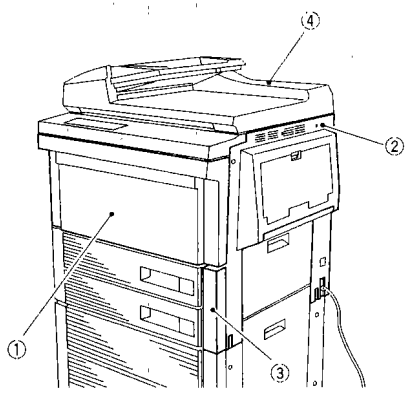
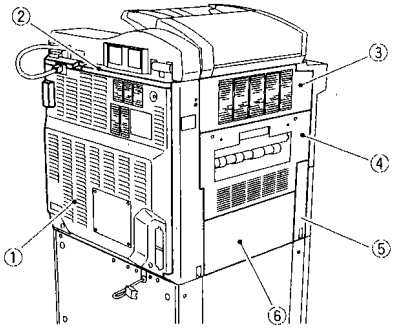
II. EXTERNALS

A. External Cover



① Front door
② Right cover (5)
③ Lower front cover (2)
④ RF-C1 (OPTION)

Figure 4-201



① Rear cover (6)
② Upper cover
③ Upper left cover (4)
④ Delivery cover (2)
⑤ Front left cover (1)
⑥ Lower left cover

Figure 4-202

Note:
The number in parentheses indicates the number of mounting screws used.
Remove the covers as instructed when cleaning, inspecting, or repairing the inside of the machine.
Those covers that may be detached by mere removal of the mounting screws are left out of the discussions.

1. Removing the Right Cover

1) Open the front door.
2) Open the multifeeder tray.
3) Remove the two screws ①, and remove the manual feed cover ②.

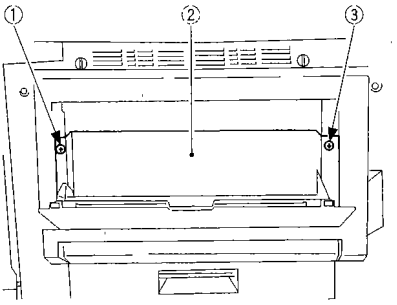


Figure 4-203

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4) Close the multifeeder tray.
5) Remove the five screws ③.

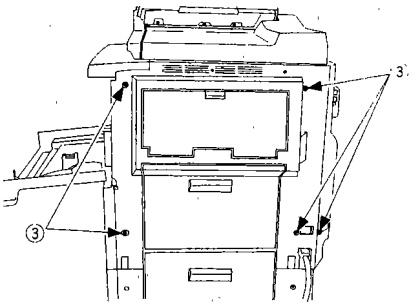

Figure 4-204

6) Open the right door.
7) While opening the multifeeder tray ④, remove the right cover ⑤.

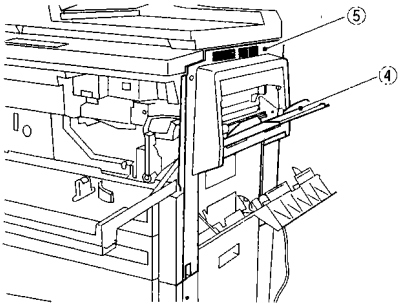

Figure 4-205

B. Control Panel

1. Removing the Control Panel

1) Remove the copyboard glass.
2) Remove vertical side index.
3) Open the front door and the delivery door.
4) Remove the left inside cover.
5) Remove the screw ① from the right cover.
6) Remove the seven screws ② used to fix the control panel in place.

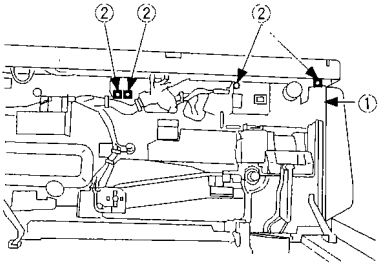

Figure 4-206

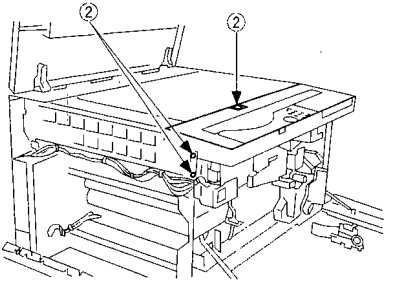

Figure 4-207

7) Disconnect the connectors from the control panel.

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2. Replacing the LCD Back Light

a. Removing the LCD Unit

1) Remove the control panel.

2) Remove the fixing mounting screw ① used for the control panel, and disconnect the six connectors ②.

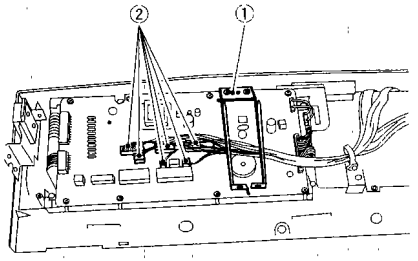

Figure 4-208

3) Disconnect the two connectors ③, and remove the two flexible cables ④.

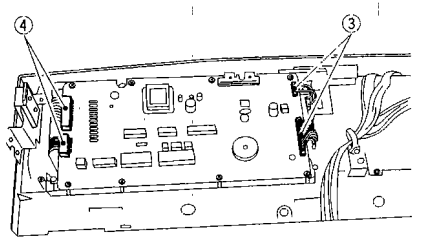

Figure 4-209

Removing the Flexible Cable
Slide the lock, and remove the cable.

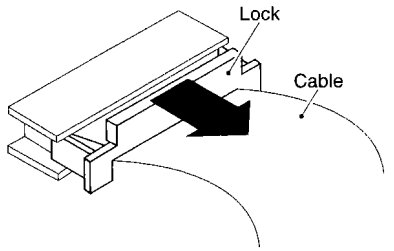

Figure 4-210

4) Remove the eight screws ⑤, and remove the LCD PCB ⑤.

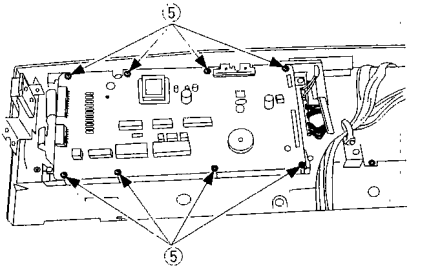

Figure 4-211

5) Remove the four screws ⑥, and remove the LCD unit.

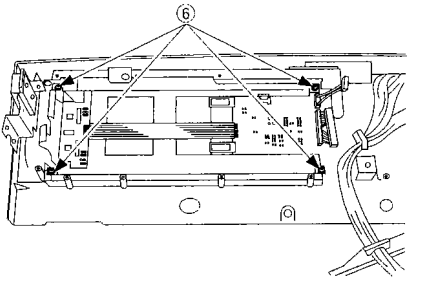

Figure 4-212

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b. Replacing the Back Light
1) Remove the LCD unit.
2) Turn over the LCD unit.
3) Disconnect the connector ①.

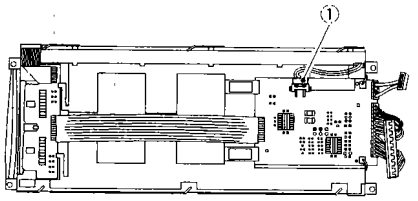

Figure 4-213

4) Using a small flat-blade screwdriver, remove the back light cover ②.

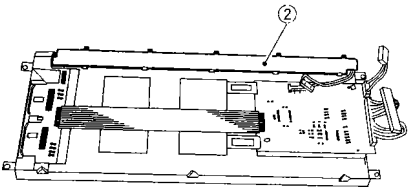

Figure 4-214

5) Remove the back light ③. At this time, take care not to bend, scratch, or tear the reflecting paper ④.

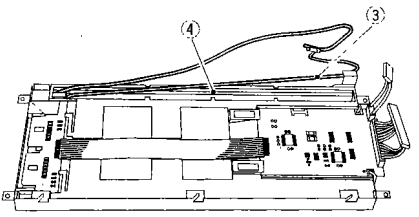

Figure 4-215

Caution:
You must take special care also when installing the back light.

■ End of the Back Light (installing)

Figure 4-216

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C. Fans

1. Removing the Scanner Cooling Fan/ Laser Cooling Fan

1) Remove the rear cover.
2) Detach the dust-proofing filter ① from the claw ②.

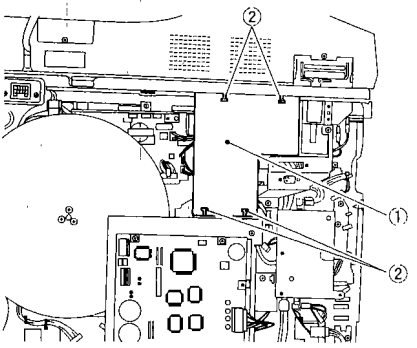

Figure 4-217

3) Disconnect the connector ③, and remove the two screws ④; then, remove the laser cooling fan ⑤.

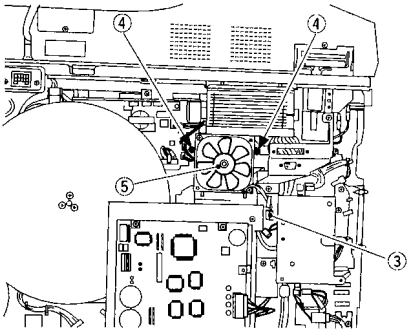

Figure 4-218

4) Disconnect the connector ⑥, and remove the three screws ⑦; then, remove the scanner cooling fan ⑧.

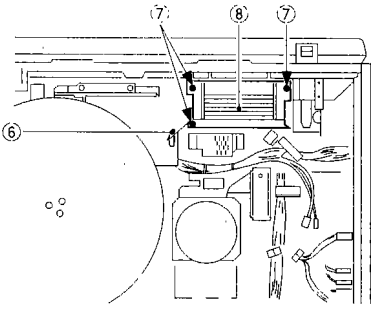

Figure 4-219

2. Removing the Exhaust Fan

1) Open the front door and the delivery door.
2) Turn the feeding assembly releasing lever counterclockwise.
3) Remove the drum unit and the ozone filter unit.
4) Remove the inside left cover.
5) Disconnect the connector ①, and remove the screw ②; the, remove the exhaust fan unit ③.

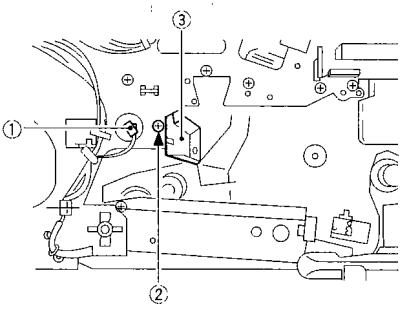

Figure 4-220

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6) Remove the two screws ④, and remove the delivery fan ⑤.

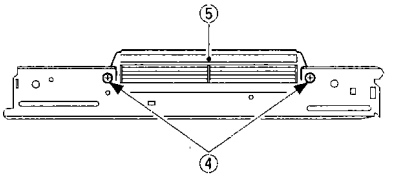

Figure 4-221

3. Removing the Feeding Fan

1) Remove the feeding assembly.
2) Remove the feeding belt.
3) Remove the connector ①, and remove the five hooks ②; then, remove the feeding fan ③.

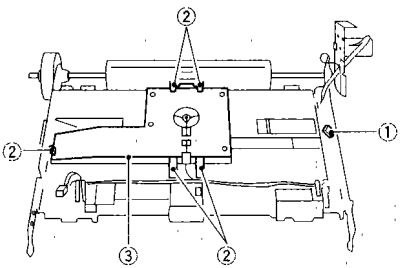

Figure 4-222

4. Removing the Ozone Fan

1) Open the front door.
2) Slide out the ozone filter ① to the front.

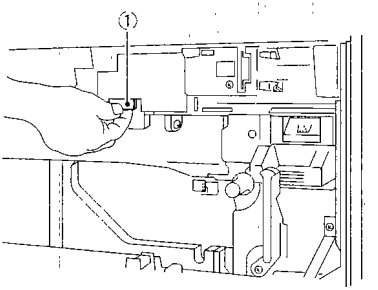

Figure 4-223

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III. DRIVE SYSTEM

A. Scanner Drive Assembly

1. Removing the Scanner Drive Motor

1) Remove the rear cover and the top cover.
2) Remove the two screws ①, and disconnect the two connectors ②; then, remove the DF connector mount ③.

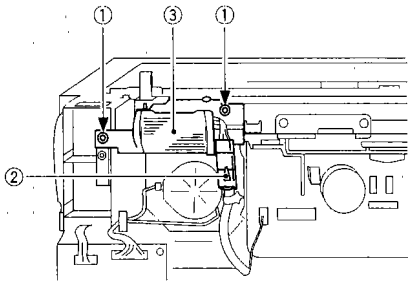

Figure 4-301

3) Remove the three screws ④, and disconnect the two connectors ⑤; then, remove the scanner drive motor ⑥.

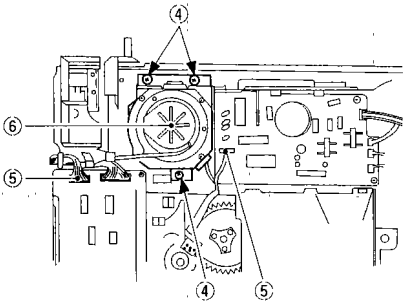

Figure 4-302

2. Routing the Scanner Drive Cable

1) Remove the copyboard cover.
2) Remove the right cover, the upper left cover, and the rear cover.
3) Remove the copyboard glass.
4) Remove the vertical size index.
5) Remove the control panel.
6) Remove the upper cover.
7) Remove the four screws ①, and remove the standard white plate ②.

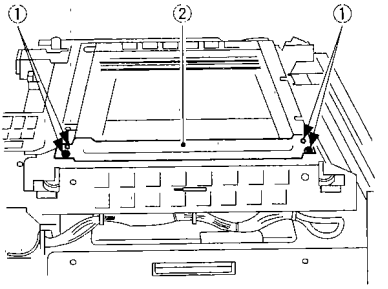

Figure 4-303

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8) Remove the flywheel.
9) Remove the DF connector mount.
10) Remove the three screws ①, and disconnect the connector ②; then, remove the DF mount (right) ③.

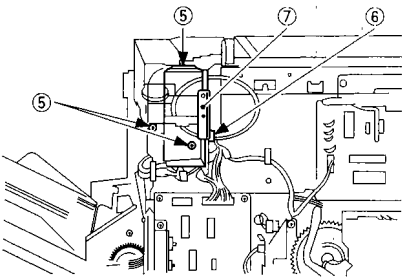

Figure 4-304

12) Remove the screw ⑧, and disconnect the five connectors ⑨; then, remove the lamp regulator PCB ⑩.

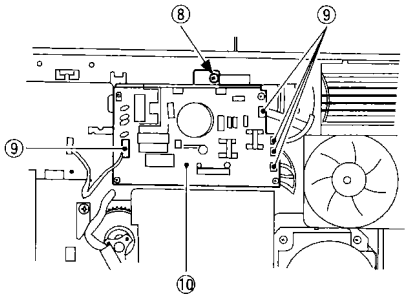

Figure 4-305

12) Remove the screw ⑪, and remove the spring ⑫; then, remove the scanner motor safety switch ⑬.

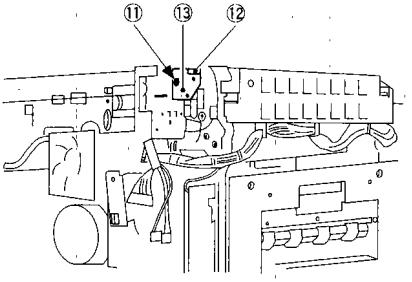

Figure 4-306

13) Remove the three screws ⑭, and remove the copyboard glass support (rear) ⑮.

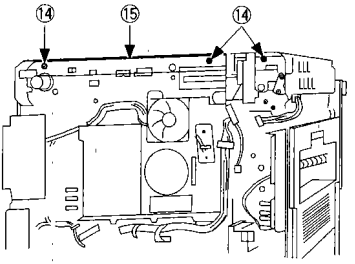

Figure 4-307

14) Remove the three screws ⑯, and remove the copyboard glass support (front) ⑰.

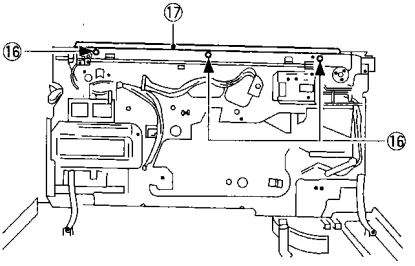

Figure 4-308

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15) Have the mirror positioning tool (FY9-3002-000) ready.
Loosen the screw on the mirror positioning tool, and contract the arm ⑱ fully.

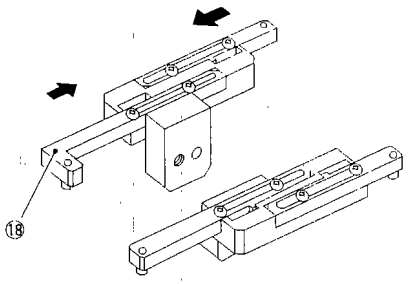

Figure 4-309

16) Move the No. 2 mirror mount so that the pulley shaft ⑲ of the No. 2 mirror is in view through the long hole in the side plate.

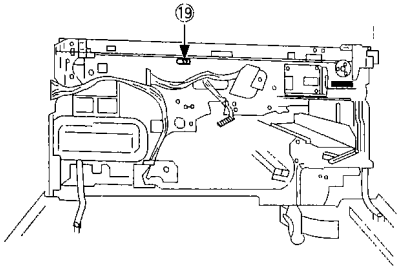

Figure 4-310

17) Fit the binding screw ⑳ (M4×10) to the pulley shaft (both front and rear); this will keep the No. 2 mirror mount in check.

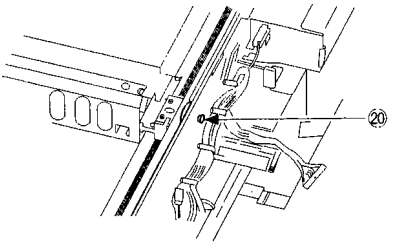

Figure 4-311

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18) Fit the scanner cable on the pulley hook as indicated in Figure 4-312.

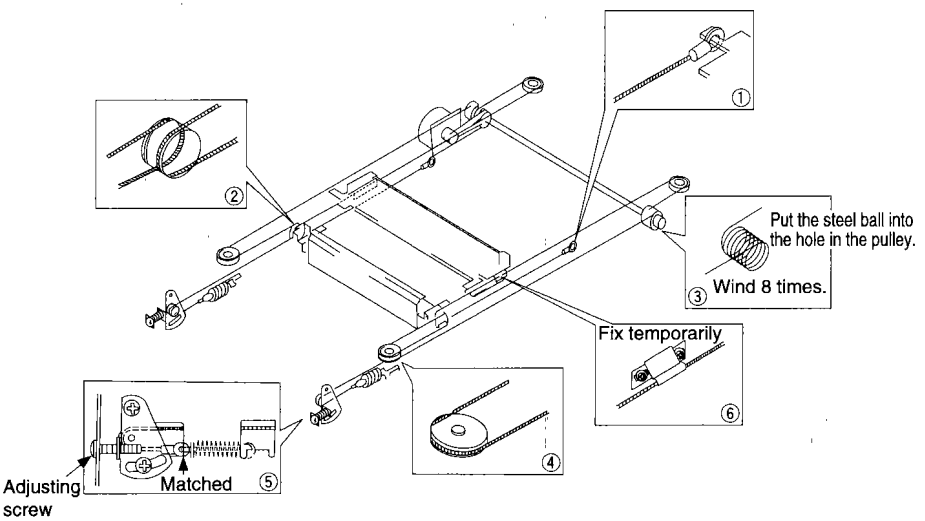

Figure 4-312

19) Remove the binding screw ⑲ from the pulley shaft of the No. 2 mirror mount (both front and rear); see Figure 4-310.

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20) Fix the mirror positioning tool ㉑ using a mounting screw ㉒ between the No. 1 mirror mount and the No. 2 mirror mount (both front and rear).

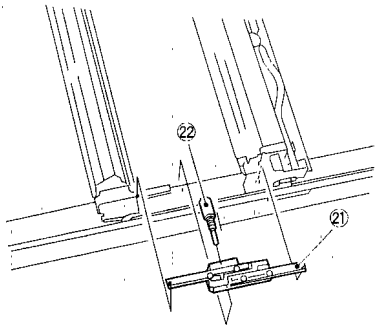

Figure 4-313 (front)

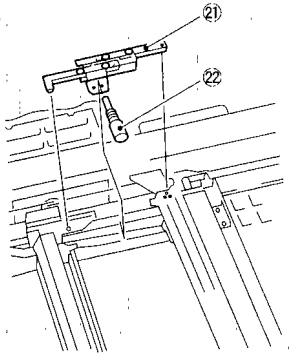

Figure 4-314 (rear)

21) Fix the scanner cable fixing ㉓ through the long hole in the side plate to the No. 1 mirror mount using two screws ㉔ (both front and rear).

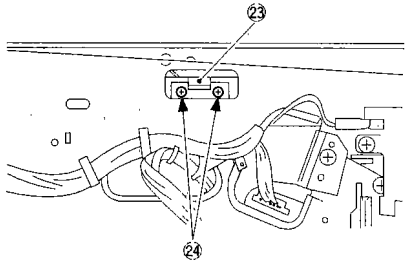

Figure 4-315

22) Remove the mirror positioning tool, and assemble the parts.

3. Adjusting the Tension of the Scanner Drive Cable

To adjust the tension of the scanner drive cable, turn the adjusting screw shown in Figure 4-312 ⑤, thereby varying the position of the pulley.

Turn the adjusting screw so that the end of the spring and the end of the hole in the side plate match as shown in ⑤ of Figure 4-312.

B. Main Motor/Main Drive Assembly

1. Removing the Main Motor/Main Drive Assembly

1) Remove the rear cover.
2) Remove the flywheel.
3) Remove the high-voltage transformer.
4) Disconnect the two connectors ① of the main motor.
5) Remove the screw ②, and remove the main motor ③.

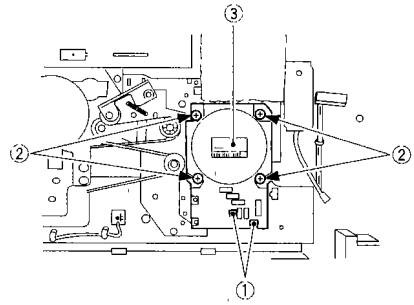

Figure 4-316

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7) Remove the fixing assembly.
8) Detach the two drive belts ④ from the gears.
9) Remove the four screws ⑤, and detach the drive assembly ⑥.

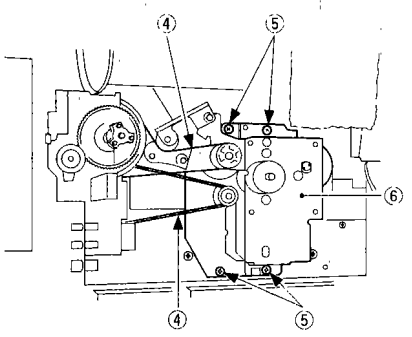

Figure 4-317

Caution:
The main drive assembly is adjusted at the factory with high precision; do not disassemble the front side panel and the rear side panel of the main drive assembly.

C. Drum Drive Assembly

1. Removing the Drum Drive Assembly

1) Open the front door.
2) Remove the drum unit and the developing assembly.
3) Remove the multifeeder unit and the pick-up unit.
4) Remove the rear cover.
5) Remove the flywheel.
6) Remove the high-voltage transformer.
7) Disconnect the five connectors ①, and remove the screw ②; then, remove the lamp regulator PCB ③.

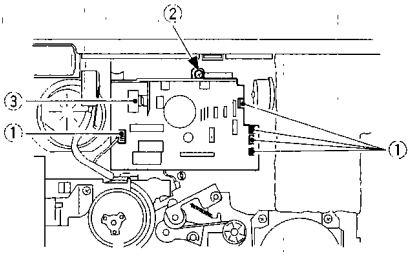

Figure 4-318

8) Remove the speaker support plate, disconnect the three connectors ④, and remove the screw ⑤; then, remove the scanner motor driver PCB ⑥.

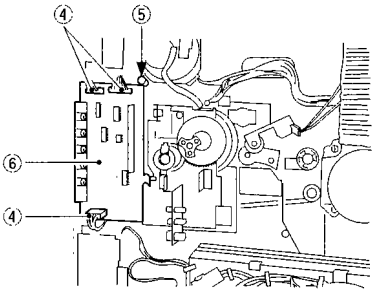

Figure 4-319

9) Remove the grip ring ⑦, and disconnect the connector ⑧; then, remove the registration clutch.

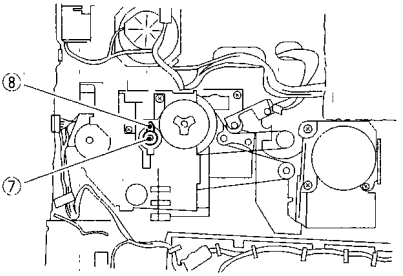

Figure 4-320

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10) Remove the E-ring ⑨ of the registration roller.
11) Disconnect the two connectors ⑩.
12) Detach all harnesses fixed to the drum drive assembly.

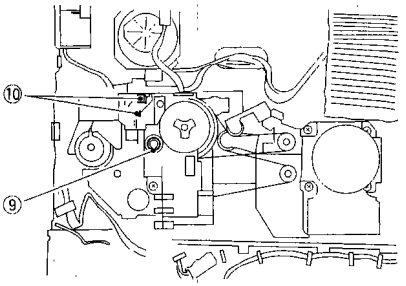

Figure 4-321

13) Remove the screw ⑪, and remove the clutch stop plate ⑫.
14) Remove the grip ring ⑬, and disconnect the connector ⑭; then, remove the pre-registration clutch ⑮.

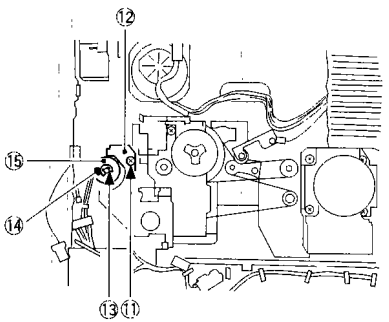

Figure 4-322

15) Detach the two drive belts ⑯.
16) Remove the seven screws ⑰, and remove the drum drive assembly ⑱.

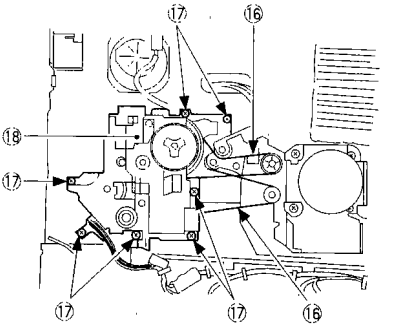

Figure 4-323

D. Pre-Exposure/Primary Corona Wire Cleaner Drive Assembly

1. Removing the Primary Exposure/ Primary Corona Cleaner Drive Assembly

1) Open the front door.
2) Remove the developing assembly, the drum unit, and the ozone filter.
3) Remove the left inside cover.
4) Remove the screw ②, and remove the positioning pin ③.

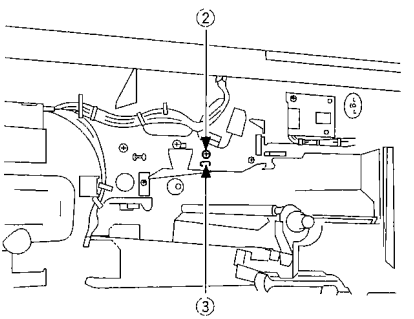

Figure 4-324

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5) Remove the two screws ④, and disconnect the connector ⑤.

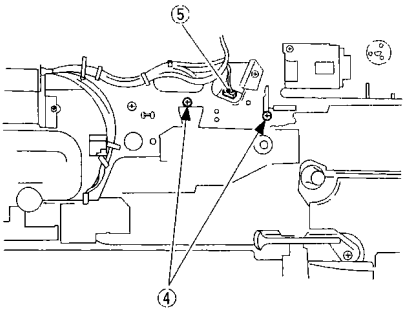

Figure 4-325

6) Remove the primary exposure/primary corona wire cleaner drive assembly ⑥ while pushing it down.

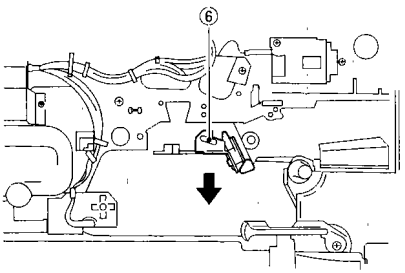

Figure 4-326

E. Cleaning Belt Drive Assembly

1. Removing the Cleaning Belt Drive Assembly

1) Remove the rear cover.
2) Remove the connector mount ①.

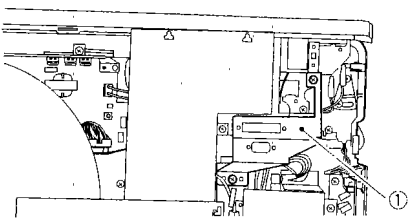

Figure 4-327

4) Disconnect the two connectors ②.
5) Remove the screw ③, and remove the cleaning belt drive assembly ③.

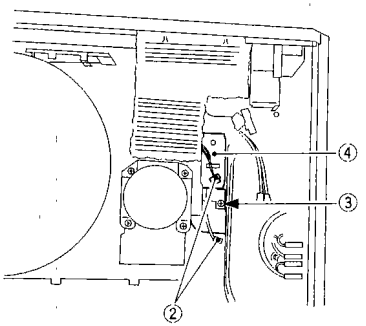

Figure 4-328

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2. Positioning the Cleaning Belt Drive Solenoid

Install the solenoid so that the solenoid arm ② butts against a when the plunger ① of the cleaning belt drive solenoid is pushed by a finger.

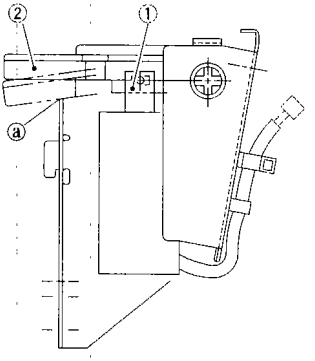

Figure 4-329

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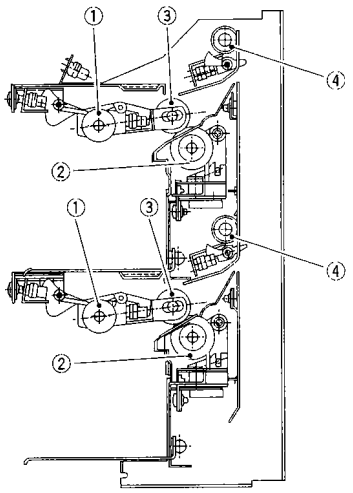
IV. PICK-UP FEEDING ASSEMBLY

A. Pick-Up Assembly

1. Construction



① Pick-up roller
② Separation roller
③ Feeding roller
④ Vertical path roller

Figure 4-401 (cross section)

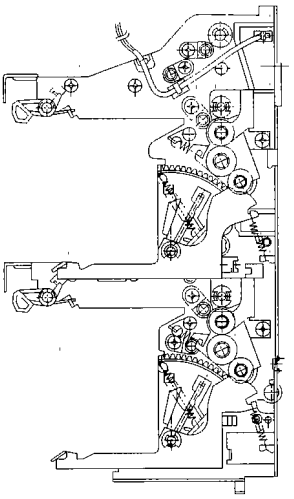
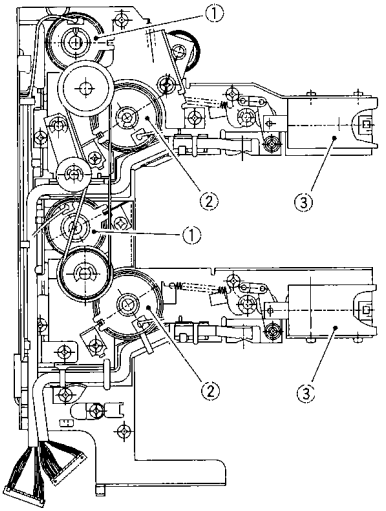


Figure 4-402 (front view)



① Vertical path roller clutch
② Pick-up roller clutch
③ Pick-up roller release solenoid

Figure 4-403 (rear view)

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2. Removing the Pick-Up Assembly

1) Remove the cassettes from the copier.
2) Remove the right cover.
3) Remove the screw ①, and remove the front left cover ② and the lower front cover ③.

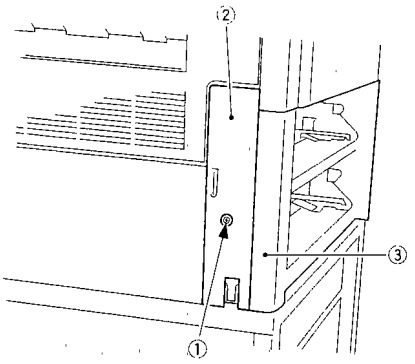

Figure 4-404

4) Disconnect the two connectors ④ of the lifter motor.
5) Remove the four screws ⑤, and remove the cassette lifter motor assembly ⑥.

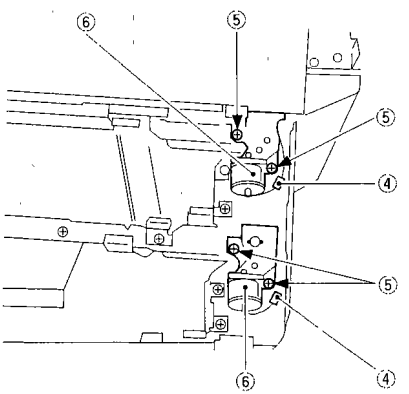

Figure 4-405

6) Disconnect the three connectors ⑦ of the pick-up assembly.
7) Remove the six screws ⑧, and remove the pick-up assembly.

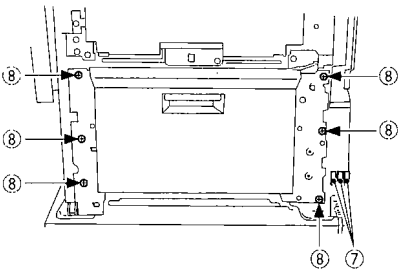

Figure 4-406a

■ When installing the pick-up assembly to the copier, make sure that the feet of the pick-up assembly are below the lifter releasing arm ①.

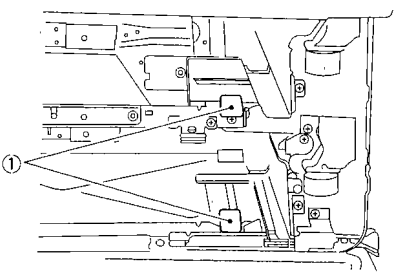

Figure 4-406b

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3. Removing the Pick-Up Roller

1) Remove the pick-up assembly.
2) Remove the stop ring (plastic) ①, and remove the pick-up roller ② together with its collar.

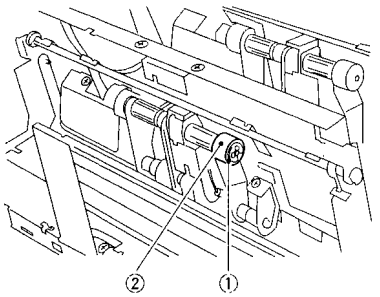

Figure 4-407

4. Points to Note When Installing the Pick-Up Roller

When installing the pick-up roller ① to the pick-up assembly, make sure that the round marking ② on its rubber portion is toward the front of the copier.

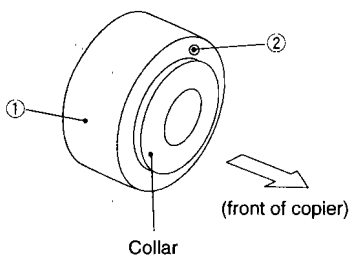

Figure 4-408

a. The collar of the pick-up roller is identified for the front and the rear by color: for the front, use a gold collar; for the rear, use a silver collar.
b. Do not detach the rubber portion of the pick-up roller from the collar.

5. Removing the Feeding Roller

1) Remove the pick-up assembly.
2) Remove the screw ①, and remove the pick-up inlet guide ②.

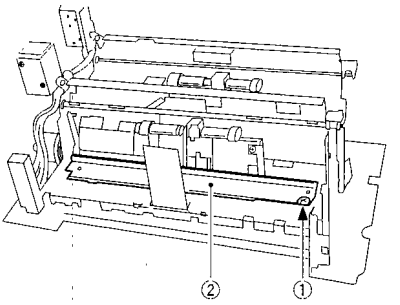

Figure 4-409

3) Remove the stop ring ③, and remove the pick-up roller ④ at the rear.

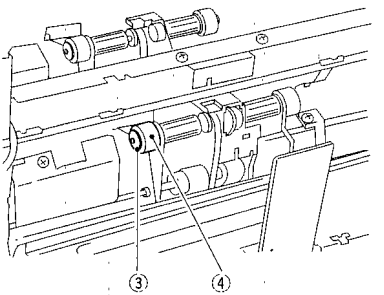

Figure 4-410

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4) Remove the screw ⑤, and remove the pick-up roller arm bushing ⑥.

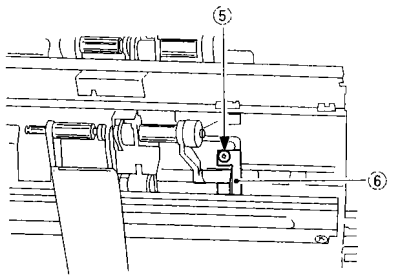

Figure 4-411

5) Disconnect the connector ⑦, and remove the feeding roller stop ring ⑧.
6) Remove the pick-up roller arm ⑨ from the metal plate.

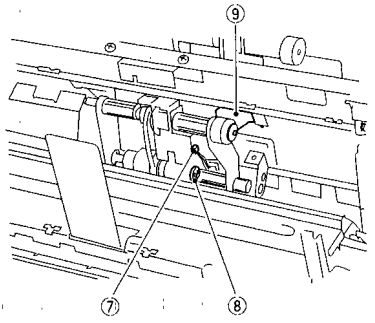

Figure 4-412

7) Pull out the pick-up roller unit ⑩ and the feeding roller ⑪ at the same time.

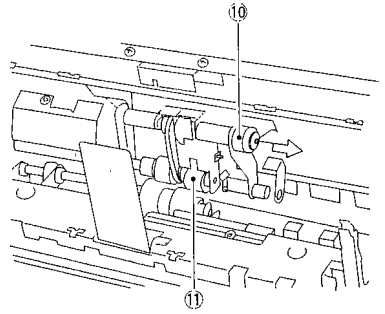

Figure 4-413

Reference:

When installing the feeding roller 1 to the pick-up assembly, make sure that the belt pulley 2 attached to the separation roller is at the rear of the copier.

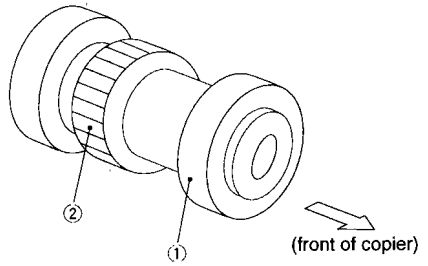

Figure 4-414

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6. Removing the Separation Roller

1) Remove the pick-up assembly.
2) Remove the two screws ①, and remove the vertical path guide ②.

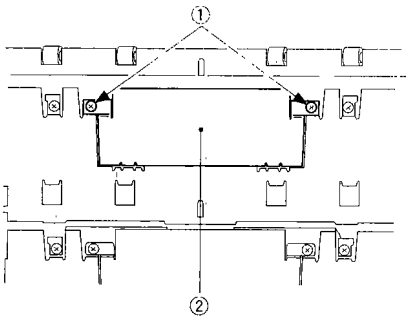

Figure 4-415

3) Remove the two screws ③, and remove the lower pick-up guide ④.

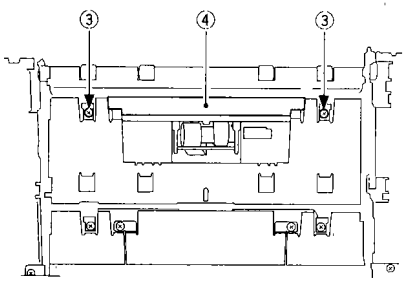

Figure 4-416

4) Remove the screw ⑤, and remove the pick-up inlet guide ⑥.

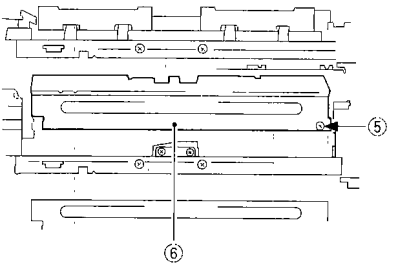

Figure 4-417

5) Remove the spring ⑦, and remove the two screws ⑧.

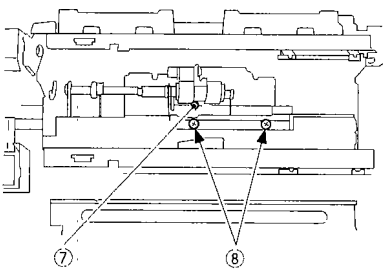

Figure 4-418

6) Remove the separation unit ⑨ from the right door side.

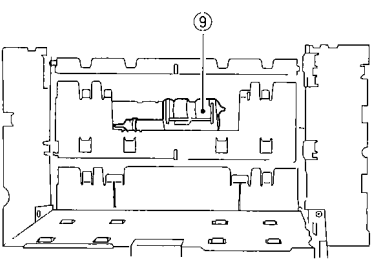

Figure 4-419

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7) Remove the two stop rings ⑩ on both left and right.
8) Pull out the separation shaft ⑪ to the left to remove the separation roller ⑫.

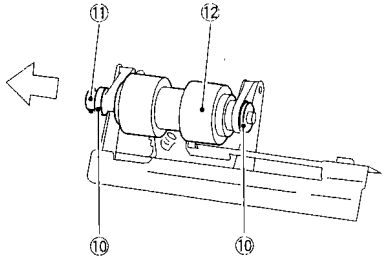


Figure 4-420

Note:
When installing the separation roller 1 to the pick-up assembly, make sure that the D-cut in the collar is toward the front.

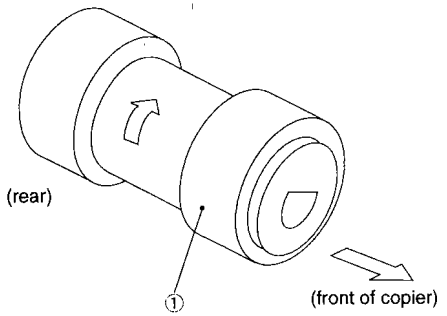
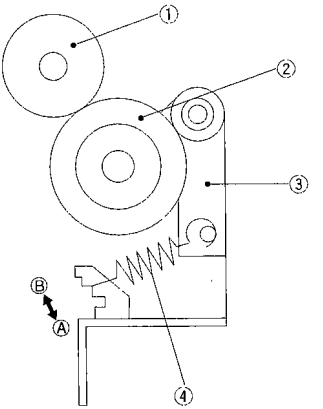


Figure 4-421

7. Adjusting the Separation Roller Pressure

If double-feeding or pick-up failure occurs during pick-up operation, adjust the position of the pressure spring of the separation roller as follows:

① if double-feeding occurs, move the spring in the direction of A;
② if pick-up failure occurs, move the spring in the direction of B.



① Feeding roller
② Separation roller
③ Locking lever
④ Pressure spring

Figure 4-422

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8. Position of the Pick-Up Roller Releasing Solenoid (SL1, SL2; pick-up assembly)

Install the solenoid so that the pick-up roller arm ① shown in Figure 4-423 butts against the upper stay ② when the plunger of the solenoid is pushed.

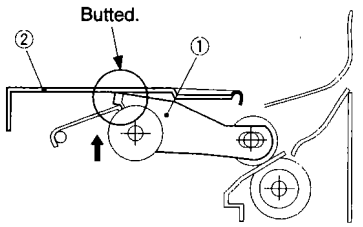

Figure 4-423

9. Releasing the Lifter

If the lifter is up, push the lifter releasing arm ① to lower it.

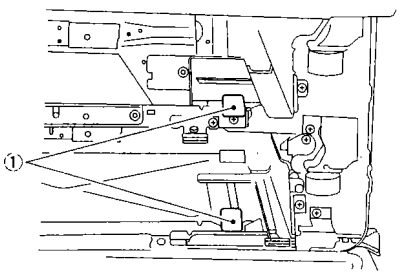

Figure 4-424

10. Adjusting the Left/Right Registration

1) Remove the lower front cover.
2) Loosen the screw ①, and adjust the position of the cassette hook plate ② so that the left/right registration is ±1.5 mm.

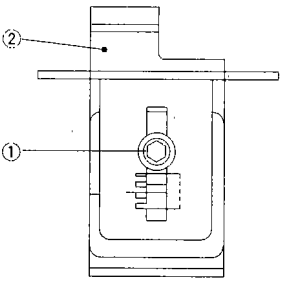

Figure 4-425

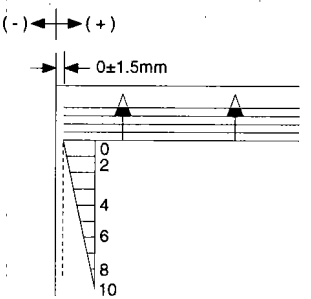

Figure 4-426

3) Go through the steps under "Storing the Paper Width Basic Settings"; see p. 3-●●.

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B. Multifeeder Assembly

1. Removing the Multifeeder Assembly

1) Remove the manual feeding assembly cover and the right cover.
2) Disconnect the connector ①.
3) Remove the four screws ②, and remove the multifeeder assembly ③.

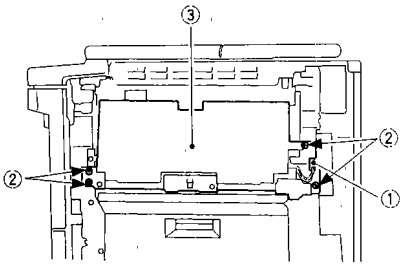

Figure 4-427

2. Removing the Multifeeder Pick-Up Roller/Separation Pad

1) Remove the multifeeder assembly.
2) Remove the stop ring ①.
3) While pushing down the separation pad ②, remove the pick-up roller ③.

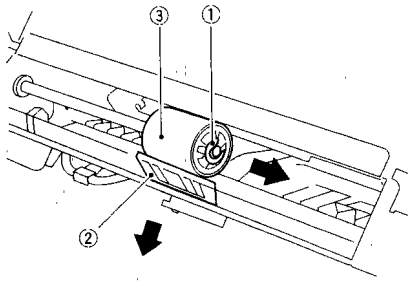

Figure 4-428

4) Lift the multifeeder tray.
5) Remove the screw ④, and remove the separation pad assembly ⑤.

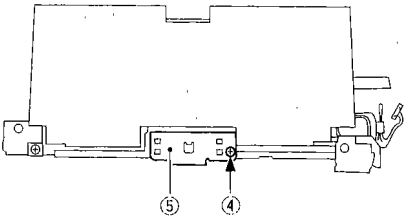

Figure 4-429

Note:
When installing the multifeeder pick-up roller ①, make sure that the cross marking ② is toward the rear.

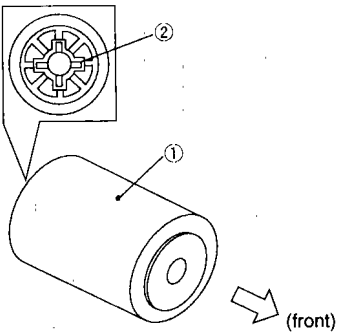

Figure 4-430

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3. Adjusting the Pressure of the Separation Pad

If double-feeding or pick-up failure occurs during pick-up operation, adjust the position of the pressure spring of the separation pad as follows:

① if double-feeding occurs, move the spring in the direction of A;

② if pick-up failure occurs, move the spring holder in the direction of B.

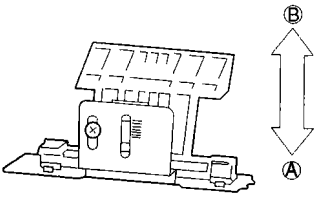

Figure 4-431

4. Adjusting the Left/Right Registration

If the left/right registration is not correct when picking up paper from the multifeeder, loosen the two screws ① to adjust the position of the tray.

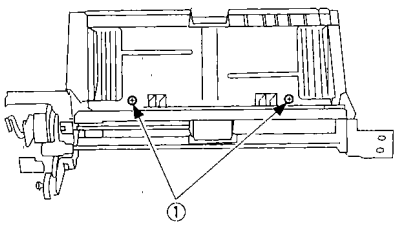

Figure 4-432

5. Adjusting the Position of the Pick-Up Plate Cam (multifeeder assembly)

Adjust the engagement of the 26T gear 1 and the 26T gear 2 so that the paper guide plate and the paper guide plate cam are positioned as indicated in Figure 433 when the solenoid is in contact with the claw of the control ring.

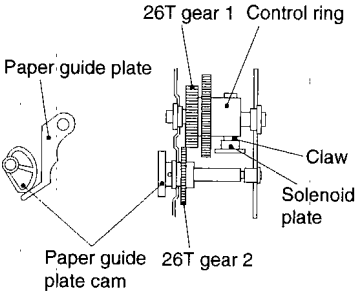

Figure 4-433

6. Routing the Timing Belt (multifeeder assembly)

Butt the rack plate of the multifeeder against A (open condition).

Move the slide volume in the direction of B, and attach the timing belt to the pulley.

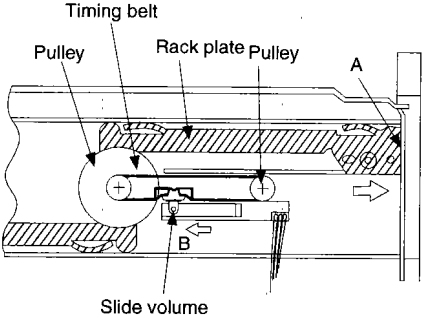

Figure 4-434

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C. Feeding Assembly

1. Removing the Feeding Assembly

1) Open the front door and the delivery door.
2) Remove the drum unit, developing assembly, and transfer corona assembly.
3) Remove the fixing assembly.
4) Remove the left inside cover and the right inside cover.
5) Disconnect the connector ①, and remove the screw ②.

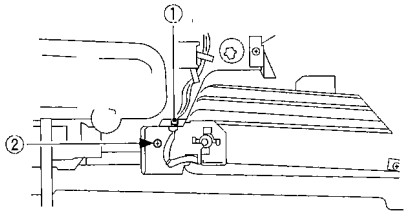

Figure 4-435

6) Slide out the feeding assembly ③ toward the front.

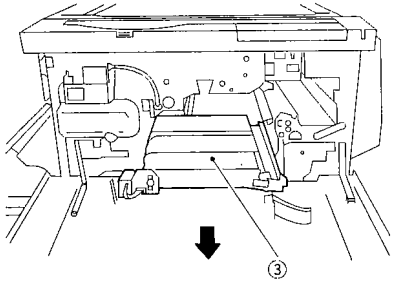

Figure 4-436

2. Removing the Feeding Belt

1) Remove the feeding assembly.
2) Remove the corona assembly duct ①.

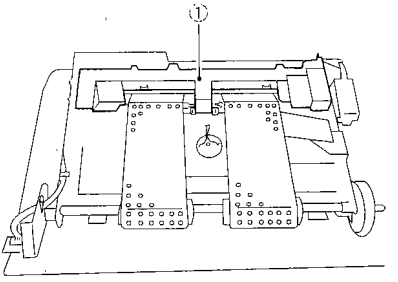

Figure 4-437

3) Remove the four screws ②, and remove the electrode mount ③.

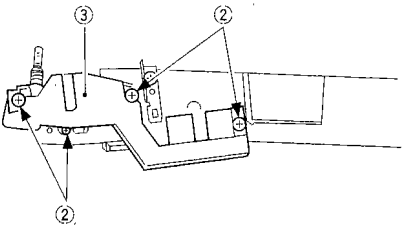

Figure 4-438

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4) Remove the two rail fixing screws ④ at the front.

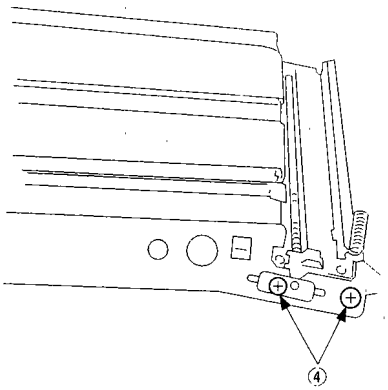

Figure 4-439

5) Disconnect the five connectors ⑤, and remove the rail ⑥.

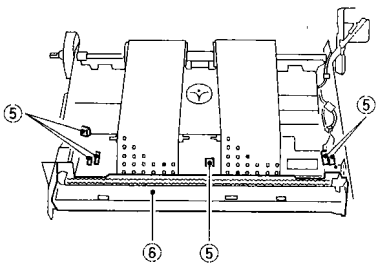

Figure 4-440

6) Remove the feeding belt ⑦.

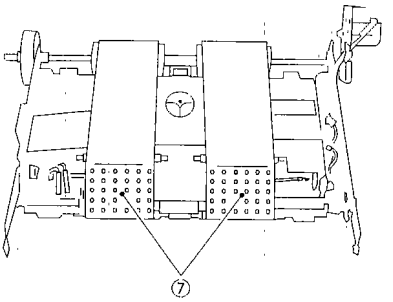

Figure 4-441

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D. Registration Roller (Lower)

1. Removing the Registration Roller

1) Open the front door.
2) Release the feeding assembly.
3) Remove the developing assembly and the drum unit.
4) Remove the left inside cover, the lower front cover, and the right inside cover.
5) Remove the pick-up unit.
6) Remove the rear cover.
7) Remove the drum drive assembly. (See p. 4-14.)
8) Disconnect the connector ①.
9) Remove the screw ②, and remove the positioning plate ③ to remove the transfer guide unit ④.

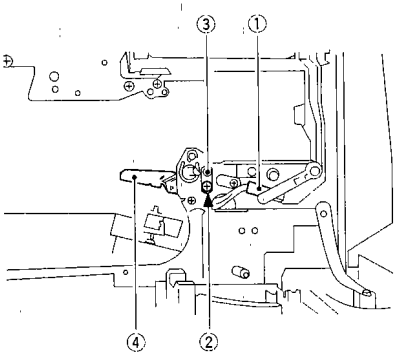

Figure 4-442

10) Remove the shaft retaining spring ⑤, and the E-ring ⑥, and the bushing ⑦. (front)

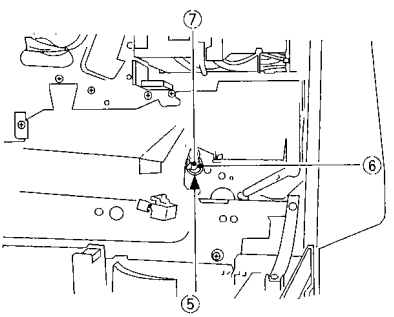

Figure 4-443

11) Remove the shaft retaining spring ⑧ at the rear.

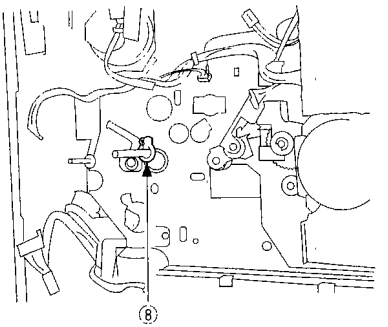

Figure 4-444

12) Move the registration roller (lower) ⑨ to the rear; when it has come off the front plate, remove it at an angle.

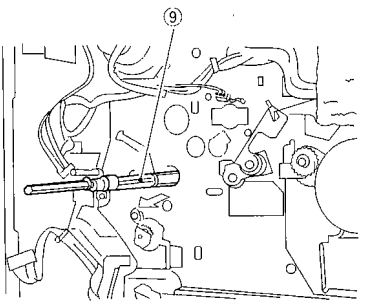

Figure 4-445

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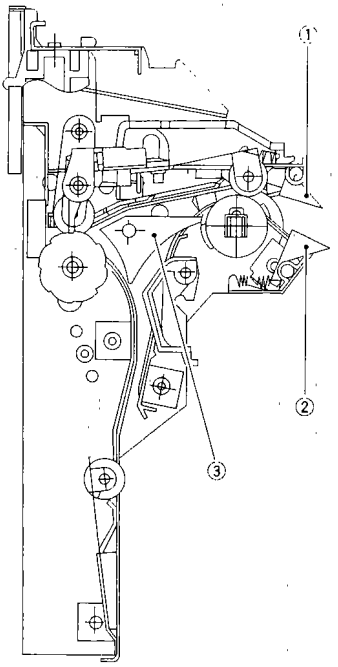
E. Delivery Assembly

1. Construction



① Upper separation claw
② Lower separation claw
③ Paper deflecting plate

Figure 4-446

2. Removing the Delivery Assembly

1) Remove the screw ①, and remove the front left cover ②.

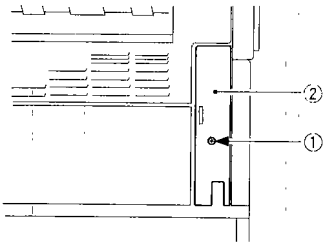


Figure 4-447

2) Open the delivery assembly.
3) Remove the connector cover, and disconnect the connector ③ and remove the wire fixing screw ④; then, remove the wire fixing screw from the front side plate.

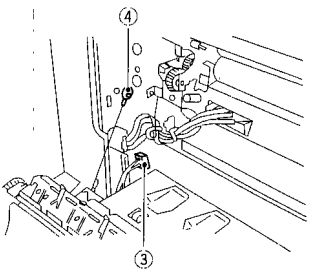


Figure 3-448

4) Remove the screw ⑤, and remove the support shaft plate ⑥ of the delivery assembly to remove the delivery assembly.
Take care not to drop the delivery assembly.

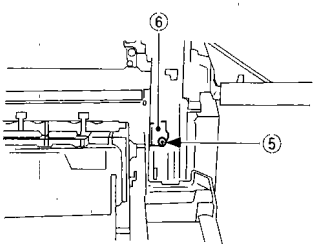


Figure 4-449

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3. Removing the Upper Separation Claw

1) Open the delivery assembly.
2) Remove the screw ①, and remove the insulating cover ②.

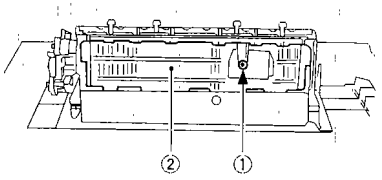

Figure 4-450

3) Remove the two screws ③, and remove the upper separation claw unit ④.

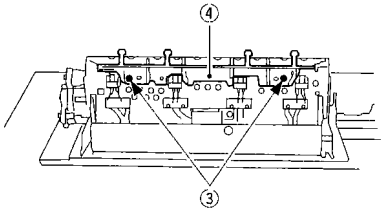

Figure 4-451

4) Remove the spring ⑤, and remove the upper separation claw ⑥.

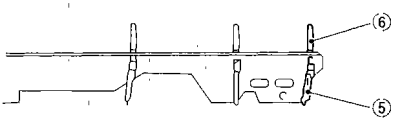

Figure 4-452

Caution:
When installing the upper separation claw unit, be sure to move it to the front.

4. Removing the Lower Separation Claw

1) Open the delivery assembly.
2) Remove the four springs ① of the lower separation claw.

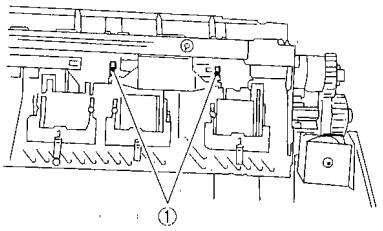

Figure 4-453

3) Remove the two screws ②, and remove the lower separation claw support plate ③.

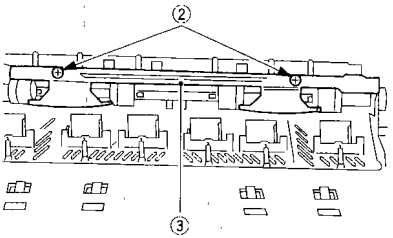

Figure 4-454

4) Remove the four lower separation claws ④.

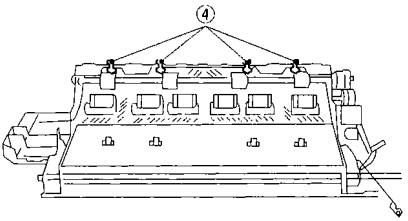

Figure 4-455

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5. Positioning the Paper Deflecting Plate Drive Solenoid (SL4; delivery assembly)

■ **Making Adjustments**

1) Remove the delivery assembly.
2) Place the delivery assembly upright on a flat surface.
3) Lift the delivery upper guide so that the side plate of the delivery assembly (viewed from the rear of the delivery assembly; Figure 4-456) and the side of the delivery upper guide (Figure 4-456) are parallel, and hold it.
4) Push in the steel core of the paper deflecting solenoid (SL4) until it stops, i.e., until the paper deflecting plate butts against the delivery upper guide.
5) Loosen the adjusting screws (Figure 4-457) so that the gap between the E-ring of the steel core in SL4 and the solenoid frame is about 1 mm.
6) Install the delivery assembly to end the adjustment.

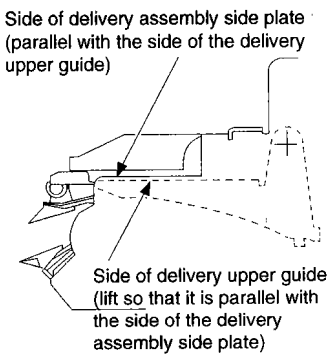
Side of delivery assembly side plate (parallel with the side of the delivery upper guide)
Side of delivery upper guide (lift so that it is parallel with the side of the delivery assembly side plate)

Figure 4-456 (inside view)

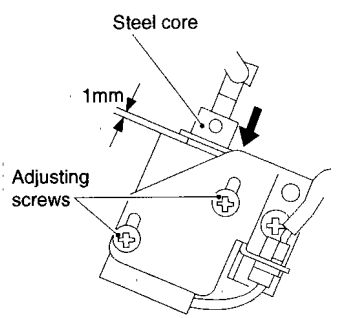

Figure 4-457 (SL4)

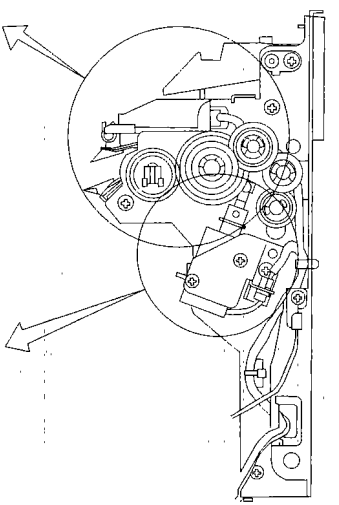

Figure 4-458 Delivery Assembly

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V. EXPOSURE SYSTEM

A. Illuminating Assembly

1. Removing the Scanning Lamp

1) Disconnect the power plug.
2) Remove the copyboard glass.
3) Remove the screw ①, and remove the anti-reflection plate ②.

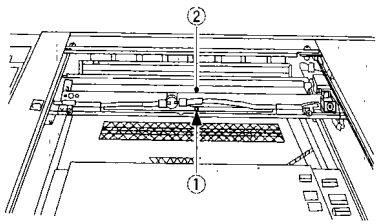


Figure 4-501

4) Turn the flat-blade screwdriver in the direction of arrow ① to open the electrode plate in the direction of ②; then, remove the scanning lamp.

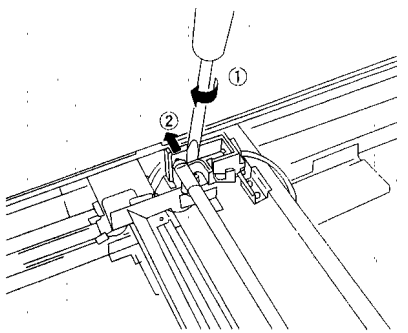


Figure 4-502

Caution:

1. Do not work if the scanning lamp is hot.
2. Do not leave fingerprints on the surface of the scanning lamp.
3. If the surface of the scanning lamp is soiled, dry wipe it.

2. Orienting the Lamp

Point the boss ① found at the center of the lamp in the direction of the arrow, and keep the logo markings toward the rear (lengthwise direction).

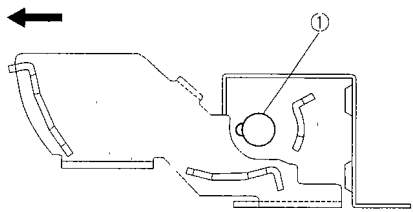


Figure 4-503

Caution:

Do not touch the surface of the lamp when installing it.

B. CCD Unit

1. Removing the CCD Unit

1) Remove the copyboard glass.
2) Remove the four screws ①, and remove the CCD cover ②.

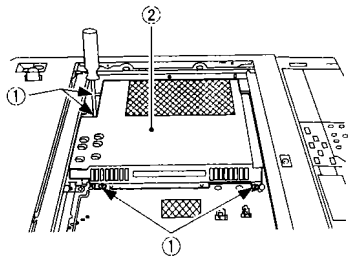


Figure 4-504

3) Disconnect the two connectors ③.
4) Remove the four screws ④.
5) Remove the CCD unit ⑤.

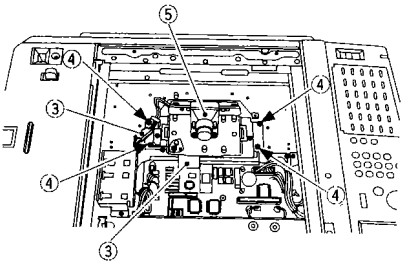


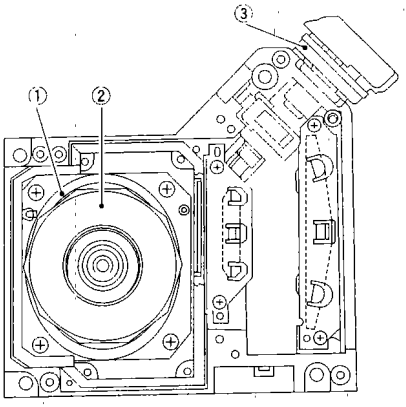
Figure 4-505

Caution:
The CCD unit is adjusted at the factory with high precision; do not remove any other screws not indicated in Figure 4-505.

C. Laser Scanner Assembly

1. Outline

The laser scanner assembly consists of the laser unit, laser scanner motor, and the 10-facet mirror.



① Laser scanner motor
② 10-facet mirror
③ Laser unit

Figure 4-506

Caution:
The laser scanner unit is adjusted at the factory with high precision using special tools.
None of its components may be replaced in the filed; replace the unit as a whole if any of its parts must be replaced.

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2. Removing the Laser Scanner Assembly

1) Remove the rear cover.
2) Remove the connector mount.
3) Disconnect the two connectors ①.

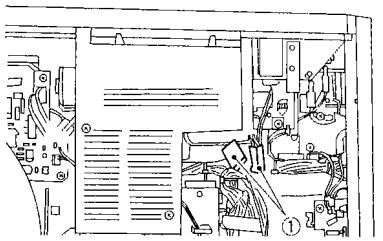

Figure 4-507

4) Remove the copyboard glass.
5) Remove the CCD cover.
6) Disconnect the two connectors ②.
7) Remove the four screws ③, and remove the IP cover ④.

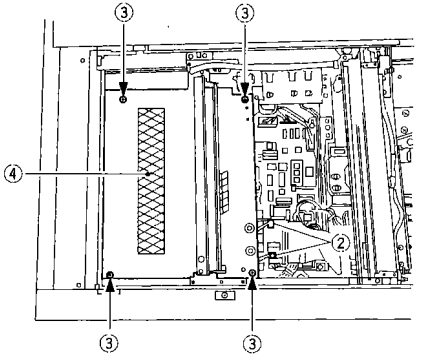

Figure 4-508

8) Disconnect all connectors from the image processor PCB.
9) Remove the five screws ⑤ (w/ washers) and the flat-head screw ⑦; then, remove the image processor PCB ⑥.

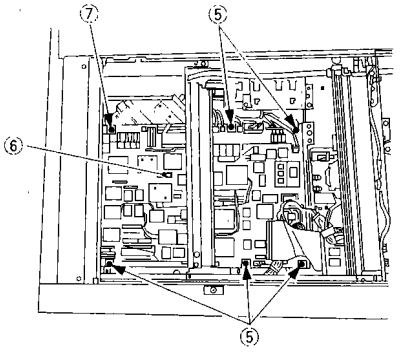

Figure 4-509

10) Remove the screw ⑧, and remove the scanner harness retaining plate ⑨.
11) Remove the four screws ⑩, and remove the shield lid ⑪.
12) Disconnect the connector ⑫ of the laser driver PCB.

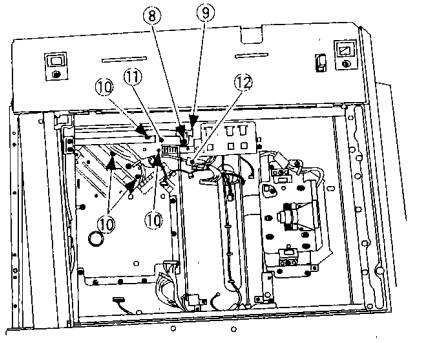

Figure 4-510

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13) Remove the four screws ⑬ (M4×10) and the ten silver screws ⑭; then, remove the laser scanner assembly ⑮.

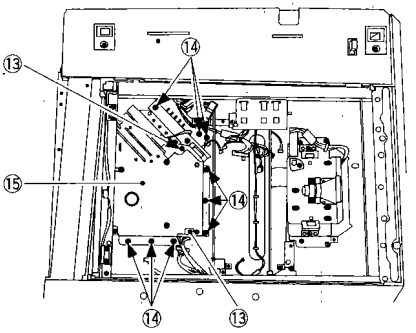

Figure 4-511a

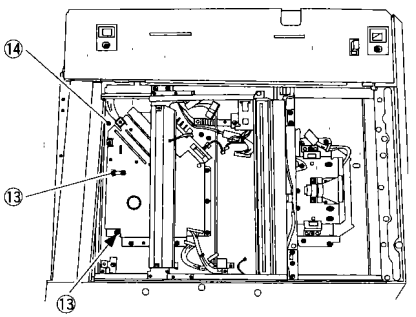

Figure 4-511b

Caution:

You need not use a shorting connector for the GP30F while its laser scanner assembly is removed; in conventional machines, a shorting connector is used to prevent damage to the laser by static electricity.

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D. No. 1 Laser Mirror/No. 2 Laser Mirror

1. Outline

The GP30F uses a laser system to form images on the photosensitive drum; and, for this reason, dirt on the laser exposure system can cause white lines or uneven density on the copies.

The dust-proofing glass may be removed and cleaned with lint-free paper; however, you must use the mirror cleaning tool (FY9-30030-000) to clean the laser mirror, since you cannot reach it with fingers.

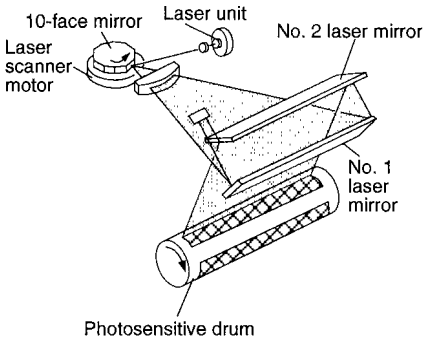

Figure 4-512

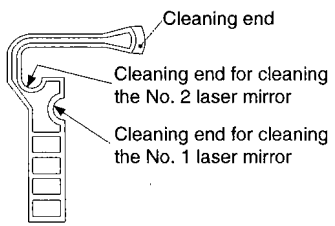

Figure 4-513 Mirror Cleaning Tool

2. Cleaning

1) Open the front door.
2) Remove the developing assembly.
3) Remove the drum unit.

- Put the drum unit in a black plastic bag to protect against light; act quickly.

4) Pull out the two sheets of dust-proofing glass, and clean them with lint-free paper.
5) Hold the mirror cleaning tool ① as shown in Figure 4-514, and insert it into the copier; then, turn it toward the No. 1 laser mirror.

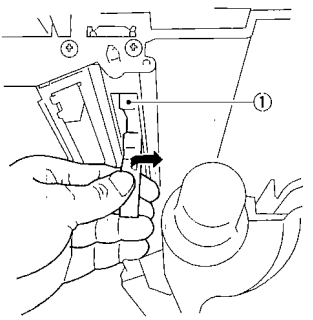

Figure 4-514

6) Butt the cleaning end of the mirror cleaning tool against the No. 1 laser mirror, and move it to the front and the rear slowly along the rail ② to clean the mirror.

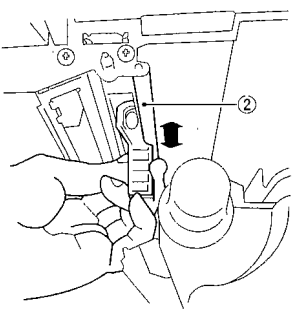

Figure 4-515

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7) Remove the mirror cleaning tool.
8) Hold the mirror cleaning tool ① as shown in Figure 4-516, and move it toward the No. 2 laser mirror.

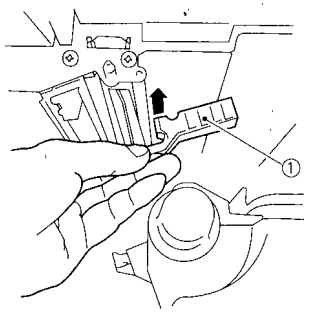

Figure 4-516

9) Butt the cleaning end of the mirror cleaning tool against the No. 2 laser mirror, and move it to the front and the rear along the rail ② to clean the mirror.

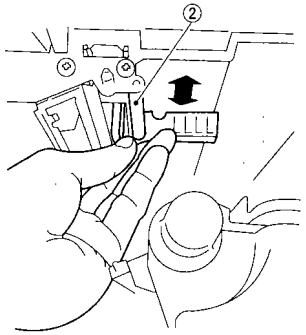

Figure 4-517

Caution:
1. Dirt on the cleaning end of the mirror cleaning tool can soil or scratch the mirror.
2. If the dirt on the laser mirror is conspicuous, suspect incorrect positioning of the dust-proofing glass or faults in the seal of the developing assembly and the drum cleaner.

10) Install all parts that have been removed in reverse order.

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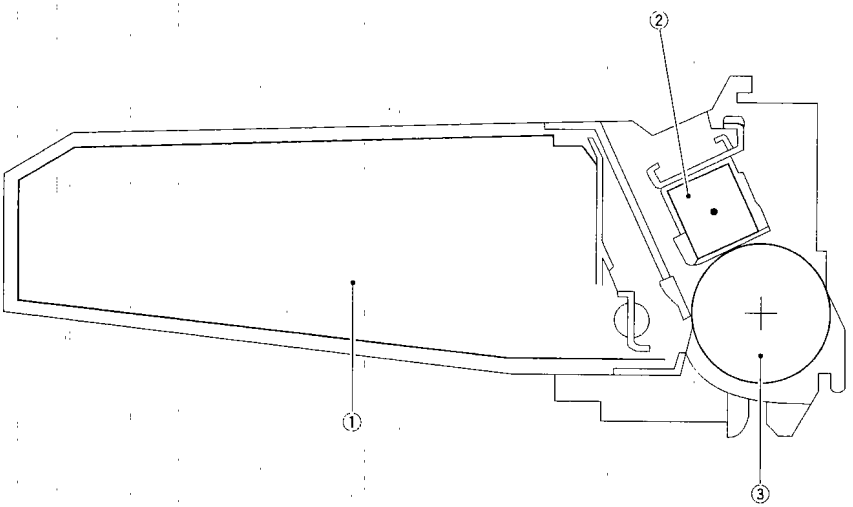
VI. CHARGING SYSTEM

A. Drum Unit

1. Outline



① Drum cleaning assembly ② Primary corona assembly ③ Photosensitive drum

Figure 4-601

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2. Removing the Drum Unit

1) Open the front door.
2) Turn the feeding assembly releasing lever ① counterclockwise.

Caution:

Do not shift the feeding assembly releasing lever while the transfer corona wire cleaning motor is operating.

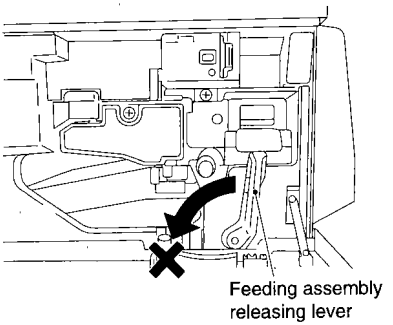

Figure 4-602a

3) Remove the screw ②.
4) Draw out the drum unit ③ slowly toward the front.

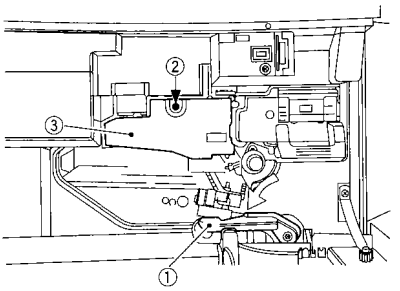

Figure 4-602b

Caution:

1. Take care not to damage the photosensitive drum.
2. The photosensitive drum is highly susceptible to light; exposure even to room light can cause white spots or black bands on the copies.

As a rule, do not turn on the power without installing the drum unit; doing so can cause the registration roller and the transfer guide to interfere with each other and the registration roller will be damaged if it is rotated during WMUPR.

3. Cleaning

If the surface of the photosensitive drum is soiled, wipe it with a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

Caution:

Do not dry wipe or use solvent.
Do not use drum cleaning powder.

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4. After Replacing the Drum Unit

After replacing the drum unit, record the date of replacement and the counter reading on the label shown in Figure 4-603; attach the label behind the front cover of the new drum unit, and go through the Image Adjustment Basic Procedure.

日付 date date Datum	カウンター counter compteur Zähler	備考 notes note Notiz

Figure 4-603

B. Corona Assemblies

1. Outline

The primary and transfer corona assemblies are installed around the photosensitive drum.

2. Removing the Primary Corona Assembly

1) Remove the drum unit from the copier.
2) Move the corona wire cleaner to the front.
3) Remove the cross member ① of the corona wire cleaner.

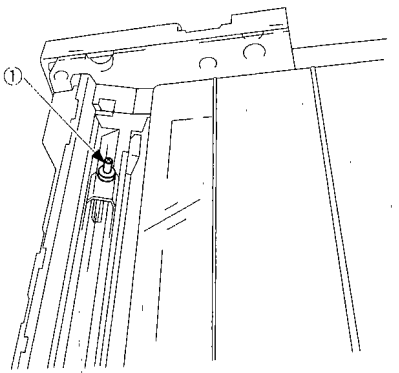

Figure 4-604

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4) Remove the two screws ②, and remove the primary corona assembly ③ from the drum unit.
At this time, take care so that the grid plate of the primary corona assembly and the side plate of the drum unit come into contact and deform the grid plate.

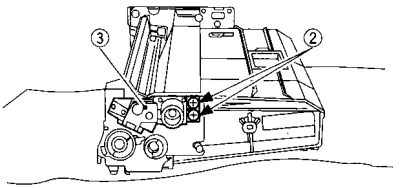

Figure 4-605

3. Removing the Transfer Corona Assembly

1) Open the front door.
2) Release the feeding assembly.
3) Remove the screw ①, and remove the stopper plate ②.

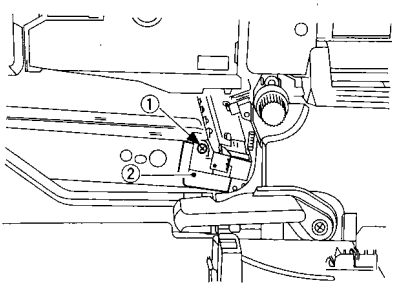

Figure 4-606

4) Pull out the transfer corona assembly toward the front.

Caution:
When pulling out the transfer corona assembly, hold the assembly as shown in Figure 4-607, and pull it out horizontally after making sure that the corona wire cleaner and the corona wire cleaner mount have been disconnected.

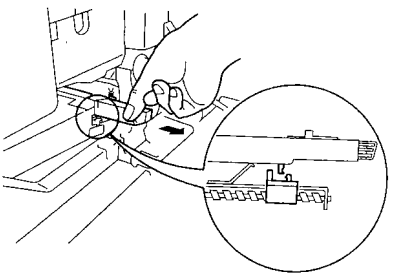

Figure 4-607

The corona wire cleaner and the corona wire cleaner mount will become engaged if you force down the transfer corona assembly as shown in Figure 4-608.

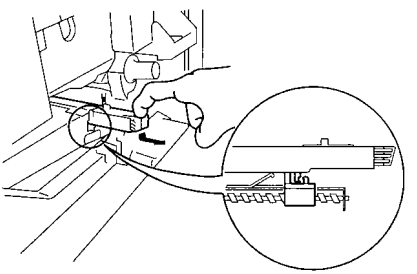

Figure 4-608

If you pull out the transfer corona assembly in this condition, you can damage the corona wire cleaner or the corona wire cleaner mount.

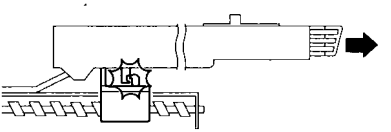

Figure 4-609

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Caution:
Do not shift the feeding assembly releasing lever while the transfer corona wire cleaner motor is rotated.

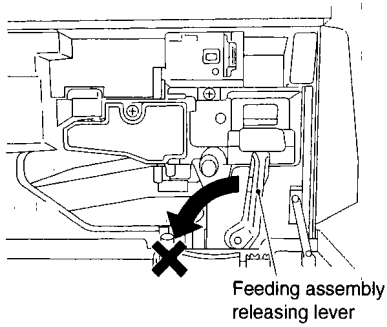

Figure 4-610

If the feeding assembly releasing lever is shifted while the transfer corona wire cleaner motor is rotated, the corona wire cleaner mount and the corona wire will become disengaged, changing the spatial relationship of both when the lever is shifted back again; as a result, the home position of the corona wire cleaner will not be detected, leading to the indication of 'E063'.

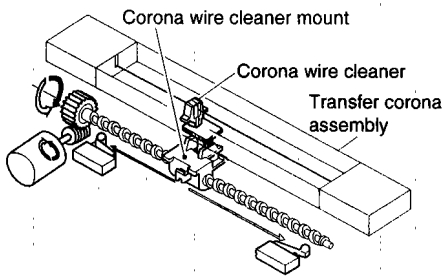

Figure 4-611

If 'E063' is indicated because of a change in the spatial relationship between the corona wire cleaner mount and the corona wire cleaner, go through the following:

1) Shift the feeding assembly releasing lever.
2) Remove the transfer corona assembly from the feeding assembly.
3) While the feeding assembly releasing lever shifted down, operate the transfer cleaner wire motor, and wait until it stops.
4) Move the corona wire cleaner of the transfer corona assembly fully toward the front.

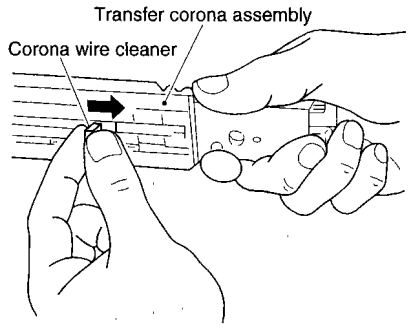

Figure 4-612

5) Install the transfer corona assembly to the feeding assembly, and shift up the feeding assembly releasing lever.

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4. Routing the Primary/Transfer Corona Wire

1) For the primary corona assembly, remove the screw ①, and remove the grid plate ②.

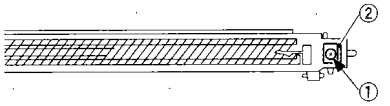


Figure 4-613

For the transfer assembly, remove the three claws ③, and remove the paper guide plate.

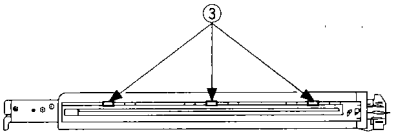


Figure 4-614

2) Move the corona wire cleaner to the front.
3) Remove the lid of the corona assembly.
4) Free about 4 mm of the corona wire from the corona wire reel (0.06mm dia.), and make a loop of about 2 mm dia.

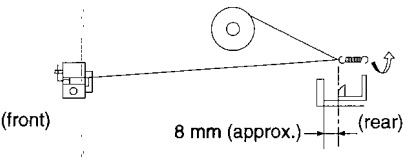
Reference:

When forming a loop, wind the wire around a hex key once, and twist the hex key about three to 4 times.

5) Cut the excess of the twisted corona wire to 1 mm or less with a nipper.

6) Hook the loop of the corona wire as shown in Figure 4-609, and route the corona wire along the V-groove of the height-adjusting roll.
Hook the corona wire tension spring on the corona wire, and twist the spring three to four times at the location shown in Figure 4-615.

Primary Corona Assembly



Transfer Corona Assembly

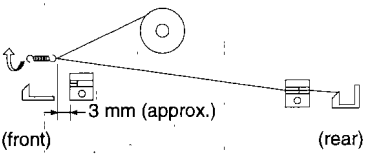


Figure 4-615

7) Cut the excess of the corona wire to 1 mm or less with a nipper.
8) Pick the end of the corona wire tension spring with tweezers, and hook it on the charging electrode.

Caution:

Make sure of the following:
- The corona wire is free of bends or twists and its gold plating has not peeled.
- The corona wire is in the V-groove of the high-adjusting roll.
- The transfer corona wire is equipped with an anti-vibration rubber piece.

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5. Routing the Gut Wire of the Transfer Corona Assembly

Take care not to allow excess tension when replacing the gut wire.

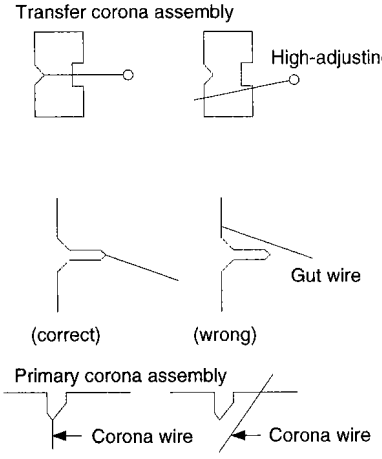

Figure 4-616

9) Put the lid back on the corona assembly.
10) For the primary corona assembly, install the grid plate.
For the transfer corona assembly, install the paper guide plate.

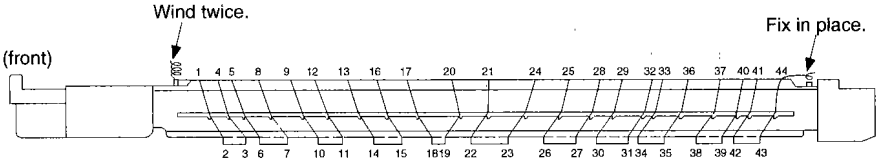

Figure 4-617 Routing the Gut Wire (transfer corona assembly)

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6. Adjusting the Height of the Corona Wire

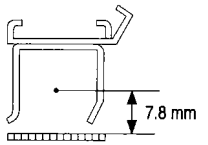
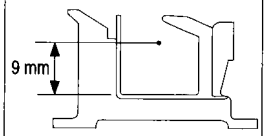
Corona assembly	Standard position	Tolerance
Primary		±1 mm
Transfer		±0.5 mm

Figure 4-618

a. You may adjust the height (position) of each corona wire by turning the screw behind its respective corona assembly; a full turn of the screw change the position of the corona wire by about 0.5 mm.
b. The values indicated in Figure 4-612 are standard values; see the label attached behind the front door and the drum unit for the values of a particular machine adjusted at the factory.
Go through the above adjustments with reference to the values indicated on the label.

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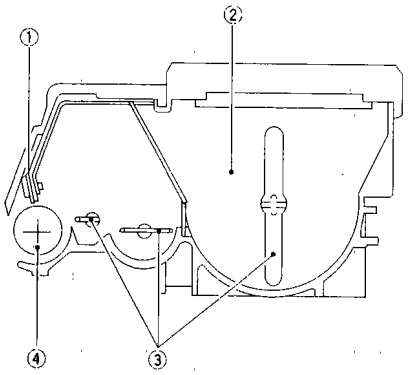
VII. DEVELOPING SYSTEM

A. Developing Assembly

1. Construction



① Blade
② Hopper assembly
③ Stirring rod
④ Developing cylinder

Figure 4-701

2. Removing the Developing Assembly

1) Open the front door.
2) Shift the feeding assembly releasing lever ①, and pull out the registration roller knob ②.

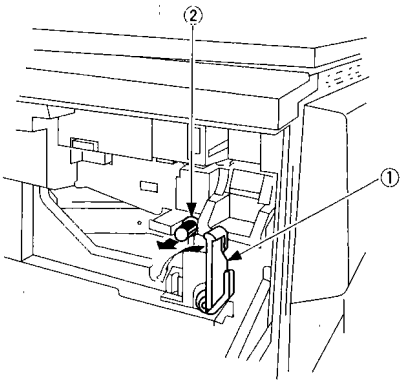


Figure 4-702

3) Remove the developing assembly stopper fixing screw ③.

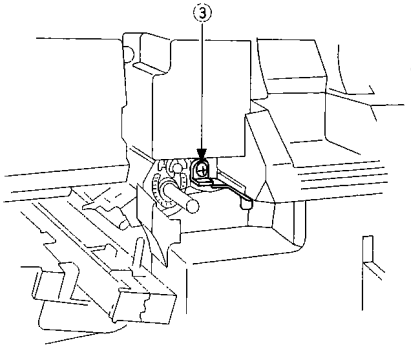


Figure 4-703

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4) Rotate the developing assembly stopper toward the front; then, push it toward the rear, and pull it out to the bottom; follow the sequence indicated in Figure 4-704.

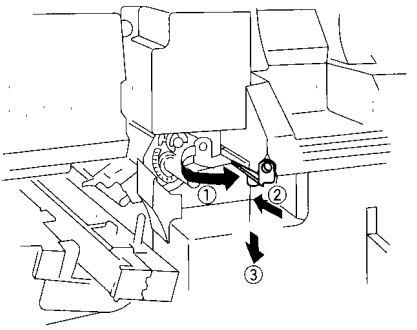

Figure 4-704

5) Hold the grip of the developing assembly, and pull it out to the front while supporting the bottom of the developing assembly with the other hand.

Caution:

1. When holding the developing assembly, do not try to hold it from both its sides; such could cause the toner to cake.
2. Be sure to install the developing assembly stopper after installing the developing assembly.

3. Removing the Blade/Developing Cylinder

1) Remove the developing assembly from the copier.
2) Remove the two screws ①, and remove the developing cylinder cover ②.

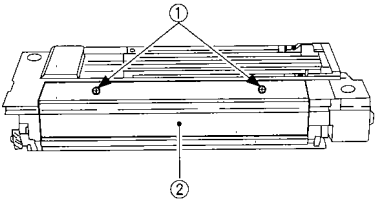

Figure 4-705

3) Remove the two screws ③, and remove the blade ④ together with its mounting plate.

Caution:

When removing the blade, take care not to damage the developing cylinder.

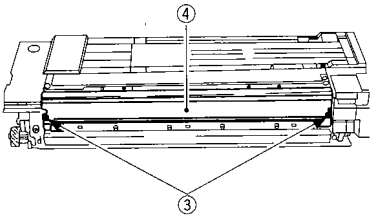

Figure 4-706

4) Place a newspaper on the floor, and pour out the toner from the developing assembly.
5) Remove the screw ⑤, and remove the grip ⑥.

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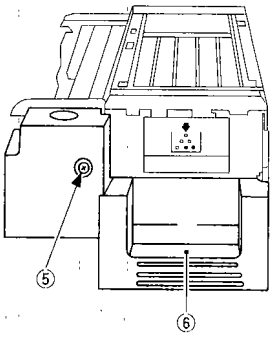

Figure 4-707

Caution:
The hopper assembly inside the developing assembly contains toner; take care so that the toner will not leak from the developing assembly.

6) Mark the position of the electrode plate ⑦ found at the front of the developing assembly with a scribe.
7) Remove the screw ⑧, and remove the electrode plate ⑦.

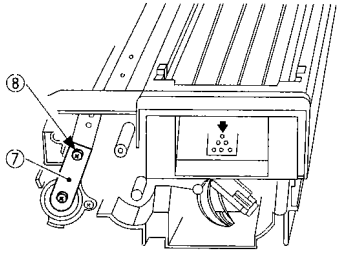

Figure 4-708

8) Remove the grip ring ⑨ and the two screws ⑩; then, remove the butting roll ⑪ and the bearing case ⑫.

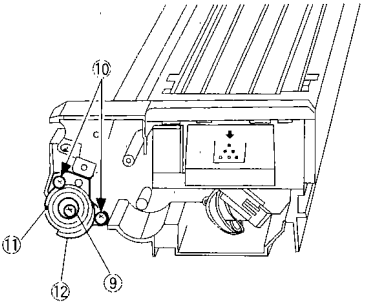

Figure 4-709

9) Remove the two screws ⑬ from the rear, and remove the gear support plate ⑭.

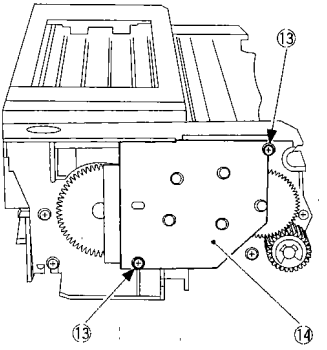

Figure 4-710

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10) Remove the E-ring ⑮, and remove the two gears ⑯.

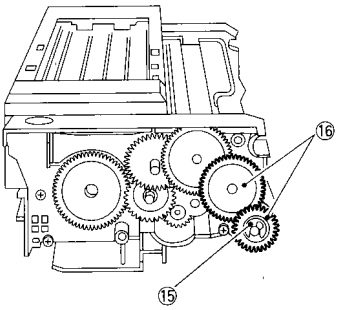

Figure 4-711

11) Remove the two screws ⑰, and remove the butting roll ⑱ and the bearing case ⑲.

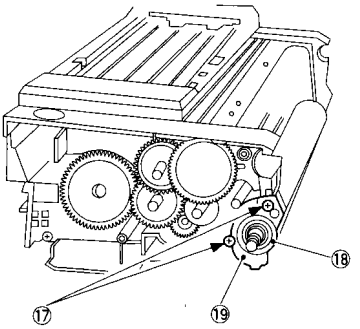

Figure 4-712

12) Remove the bearing ⑳ from both left and right of the developing cylinder.

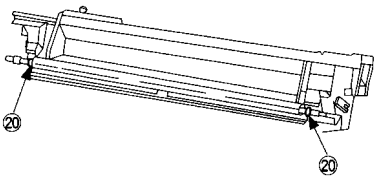

Figure 4-713

13) Remove the developing cylinder ㉑.

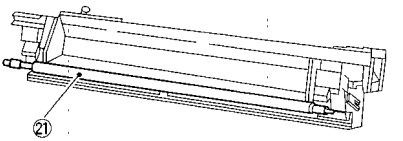

Figure 4-714

4. Points to Note When Installing the Developing Cylinder

a. The developing cylinder has its own orientation; install it so that the side with the longer shaft is toward the rear.

b. Do not leave fingerprints or oil on the surface of the developing cylinder. If found, dry-wipe it with lint-free paper.

Caution:
Dry-wipe lint-free paper when cleaning the cylinder; do not use solvent or drum cleaning powder; such can scrape off the carbon coating.

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c. Before installing the developing cylinder to the developing assembly, make sure that the magnetic seal (1) is correctly positioned.

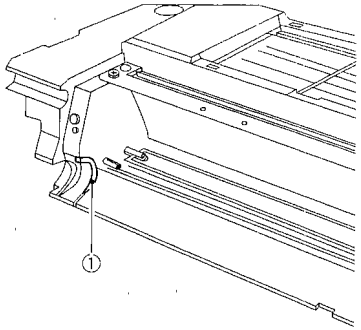

Figure 4-715

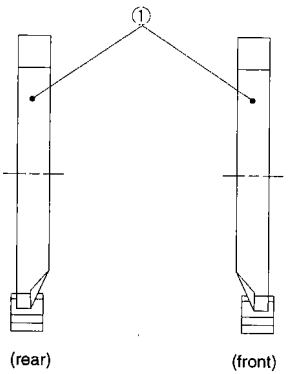

Figure 4-716 Correct Orientation of the Magnetic Seal

Attach the magnetic seal 1 while butting it against the opening; further, make sure that the magnetic seal and the container are in firm contact with each other.

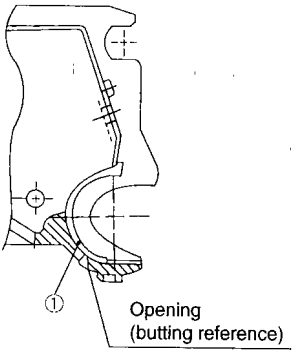

Figure 4-717

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5. Points to Note When Installing the Blade

a. The blade and the blade mount plate are assembled at the factory with high precision.
Do not disassemble the blade on its own.
If you must replace the blade on its own, use a gap gauge (CK-0057-000), and make sure that the gap between the blade and the developing cylinder is 0.23 ±0.03 mm.

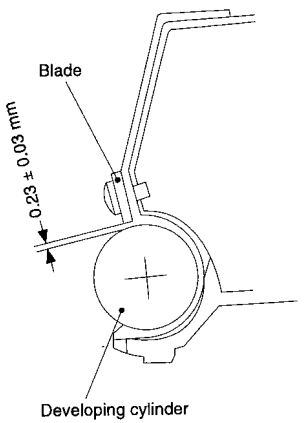

Figure 4-718

The surface of the developing cylinder is susceptible to damage; be sure to insert the gap gauge into both ends of the developing cylinder.

b. When installing the blade to the developing assembly, place a sheet of paper ① on the developing cylinder to protect the developing cylinder.

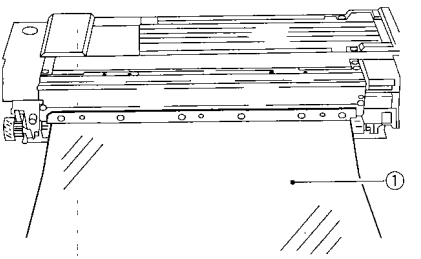

Figure 4-719

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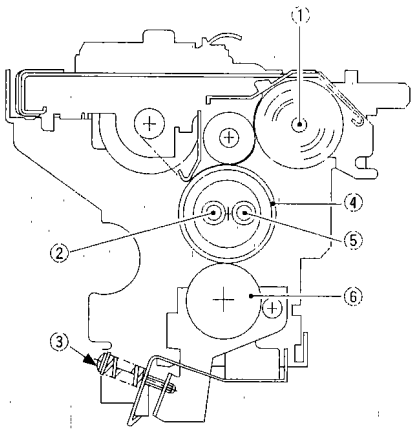
VIII. FIXING SYSTEM

A. Fixing Assembly

1. Construction



① Fixing cleaning belt
② Sub heater
③ Pressure adjusting screw
④ Upper fixing roller
⑤ Main heater
⑥ Lower fixing roller

Figure 4-801

2. Removing the Fixing Assembly from the Copier

1) Open the front door and the delivery door.
2) Remove the screw ①, and remove the fixing knob ②.

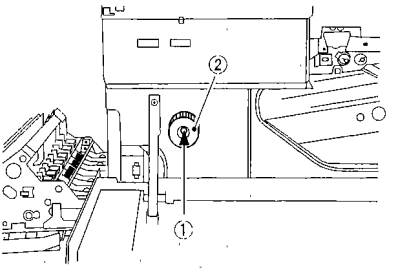


Figure 4-802

3) Remove the connector cover.
4) Disconnect the connector ③.

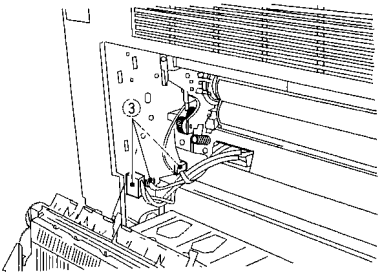


Figure 4-803

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5) Remove the two screws ④, and pull out the fixing assembly ⑤.

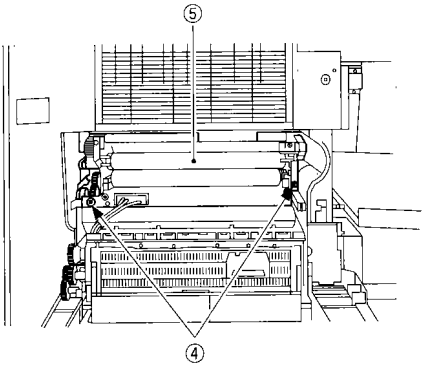

Figure 4-804

3. Removing the Fixing Heater

1) Remove the fixing assembly from the copier.
2) Remove the two screws ①, and remove the fixing cleaner assembly ②.

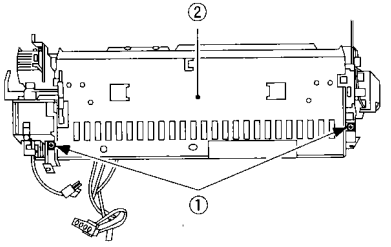

Figure 4-805

3) Remove the cord cover ③ from the thermal switch assembly.

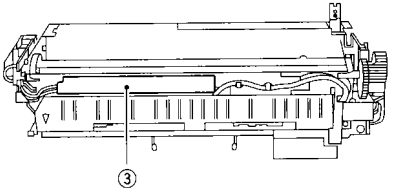

Figure 4-806

4) Pull out the two fastons ④ for the heater found on the left (facing toward the thermal switch).

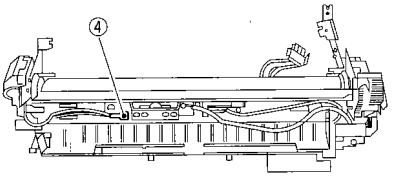

Figure 4-807

5) Turn over the fixing assembly, and remove the cord cover ⑤ from the bottom plate of the fixing assembly.

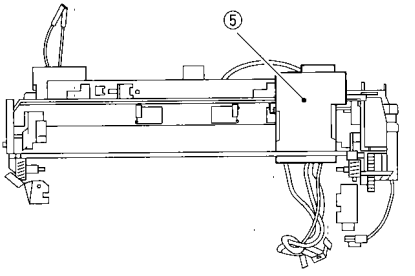

Figure 4-808

6) Pull out the faston ⑥ from the bottom of the fixing assembly.
7) Remove the screw ⑦, and remove the round terminal ⑧.

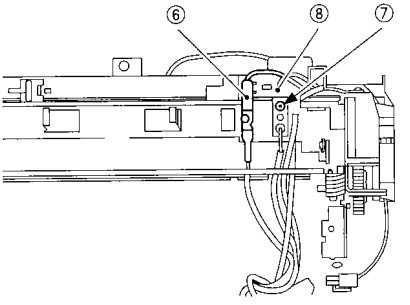

Figure 4-809

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8) Remove the screw ⑨, and remove the two cord covers ⑩.

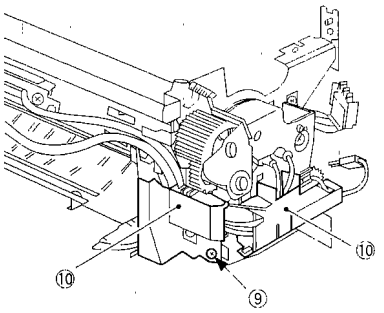

Figure 4-810

9) Remove the screw ⑪, and remove the cord cover ⑫ from the front.

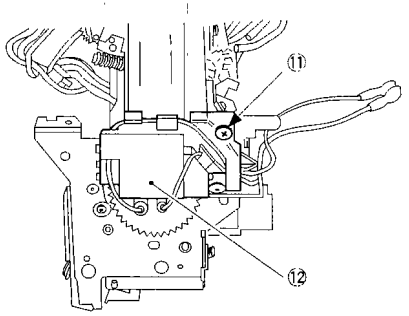

Figure 4-811

10) Remove the screw ⑬, and remove the heater mount (front) ⑭.

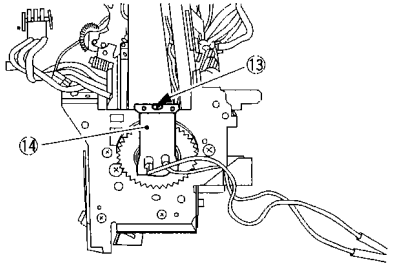

Figure 4-812

11) Remove the two screws ⑮, and remove the heater mount (rear) ⑯.

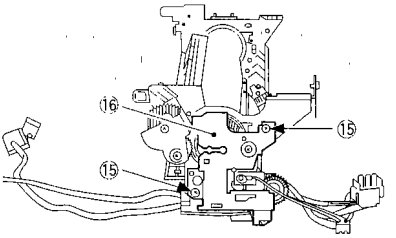

Figure 4-813

12) Pull out the two fixing heaters ⑰ slowly toward the front.

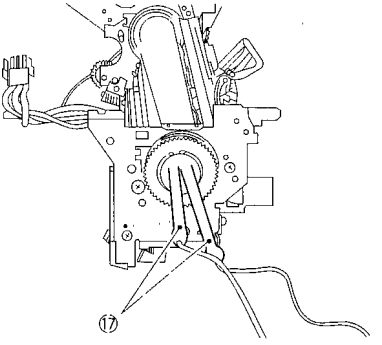

Figure 4-814

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4. Points to Note When Installing the Fixing Heater

a. Do not touch the surface of the heater.

b. Of the heaters, the sub heater may be identified by one of its terminals for the lead wires ①; one of its terminals is a round terminal ②. Both ends of the main heater are fastons ③.

Main Heater

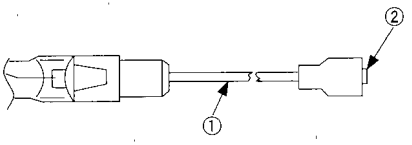

Figure 4-815

Sub Heater

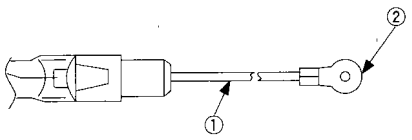

Figure 4-816

c. Compare the lead wires on both ends of the main heater and the sub heater; the one with the shorter lead wire should be at the front.

d. Insert the main heater to the right (pick-up side), and insert the sub heater to the left (delivery side) while viewing from the front of the fixing assembly.

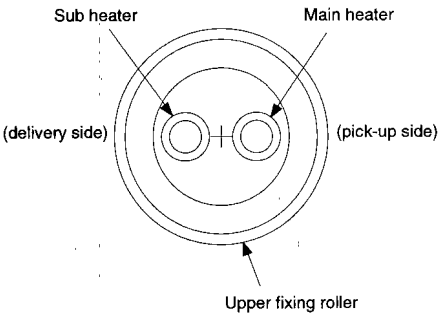

Figure 4-817

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5. Removing the Fixing Roller

1) Remove the fixing assembly from the copier.
2) Remove the fixing cleaner assembly.
3) Remove the fixing heater.
4) Remove the screw ①, and remove the thermistor mount ②.
5) Remove the two screws ③, and remove the thermal switch mount ④.
6) Remove the paper guide ⑤ of the fixing assembly.

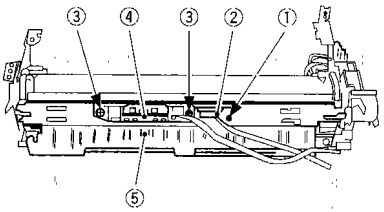

Figure 4-818

7) Remove the C-ring ⑥ and the gear ⑦ at the front.

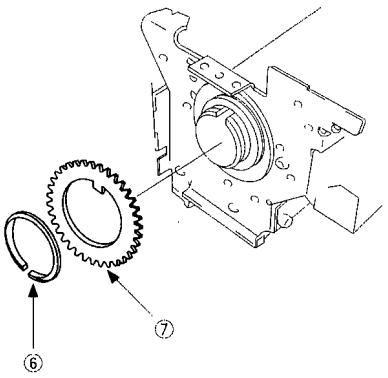

Figure 4-819

8) Remove the C-ring ⑧, bias ring ⑨, and gear ⑩ at the rear.

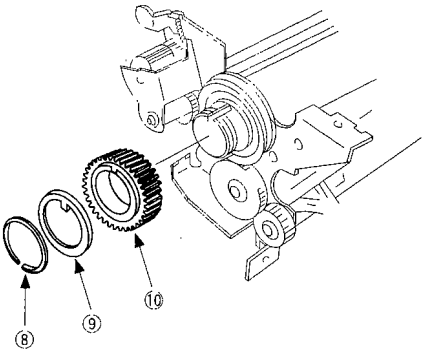

Figure 4-820

9) Remove the static eliminating brush.
10) Remove the two screws ⑫ from the lower stay ⑪, and attach them to the hole ⑬ to release the pressure of the lower roller.

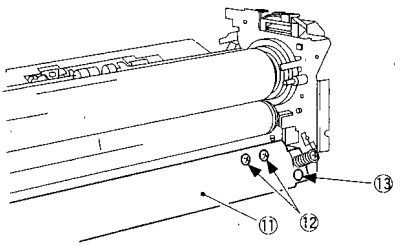

Figure 4-821

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11) Remove the screw ⑭.
12) Remove the bearing ⑮ and the insulating bush ⑯.

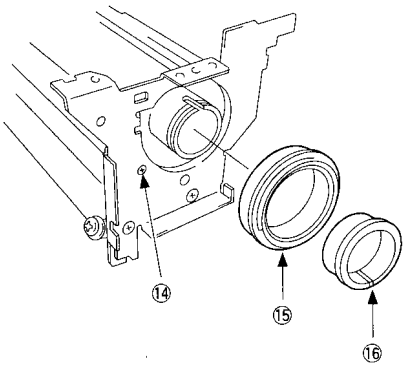

Figure 4-822

13) Pull out the fixing roller ⑰ toward the front.

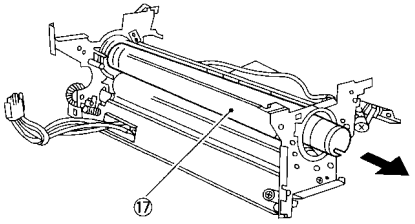

Figure 4-823

14) Lift the lower fixing roller ⑱ together with the bearing.

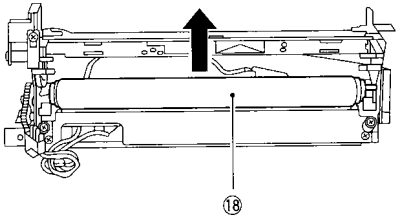

Figure 4-824

6. Points to Note When Installing the Fixing Roller

a. It is best to wrap the roller with copy paper to protect the roller surface against dirt and scratches.
b. Install the insulating bush so that it faces the bottom as shown in Figure 4-825.

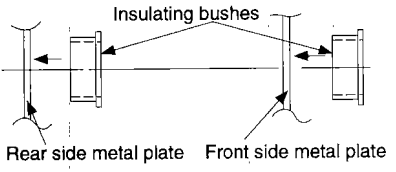

Figure 4-825

c. Install the fixing roller so that the end with the longer bushing A is toward the rear.

Figure 4-826

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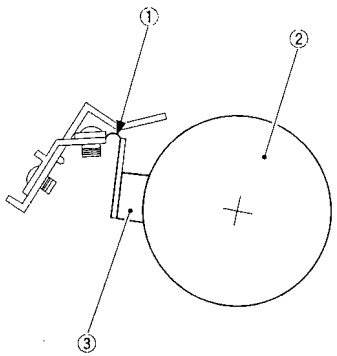
7. Mounting the Thermistor

Make sure that the detection face of the thermistor is correctly oriented in relation to the upper fixing roller and is in even contact.

In addition, make sure that the lead wire from the thermistor is not pulled too taut.

Reference:

You need not adjust the position of the thermistor. If it is not in even contact, check to see whether the thermistor spring is not deformed.



① Thermistor spring
② Upper fixing roller
③ Thermistor

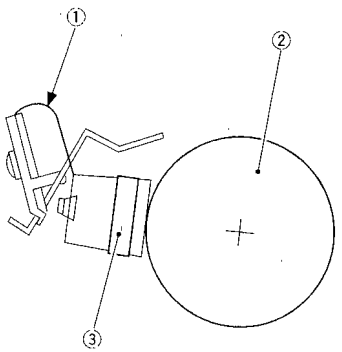
Figure 4-827

8. Installing the Thermal Switch

Make sure that the detection surface of the thermal switch is correctly oriented in relation to the upper fixing roller and is in even contact with the upper fixing roller.

Reference:

You need not adjust the position of the thermal switch. If it is not in even contact, check to see whether the thermal switch spring is not deformed.



① Thermal switch spring
② Upper fixing roller
③ Thermal switch

Figure 4-828

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9. Position of the Paper Guide

The position of the paper guide is adjusted in relation to the paper guide mount.

For this reason, you need not adjust the position when installing the paper guide.

Caution:

You will have to adjust the paper guide if you have removed the paper guide mount; therefore, do not loosen the screw on the paper guide mount. If you must loosen it, be sure to mark the position on the fixing assembly mount with a scriber.

10. Lubricating

Apply heat-resisting grease (CK-0427) on the following:

- engagement of gears (rear)
- engagement of gears of the fixing assembly (front)

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11. Adjusting the Lower Fixing Roller (nip)

Go through the following whenever you have replaced the upper fixing roller or the lower fixing roller or when fixing faults are noted:

If you are taking measurements when the fixing roller is cool, wait about 15 min after the wait period and make 20 copies before doing so.

1) Select 'NIP' in service mode ([*][4][*]), and press [OK].
2) Check that the copier makes a solid black copy automatically and delivers it.
3) Measure the width of the portion shown in Figure 4-829, where the toner is shiny.

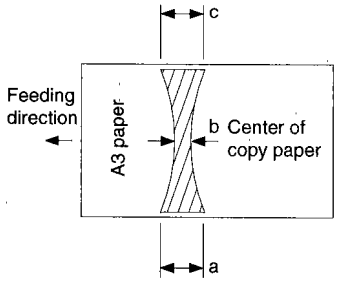


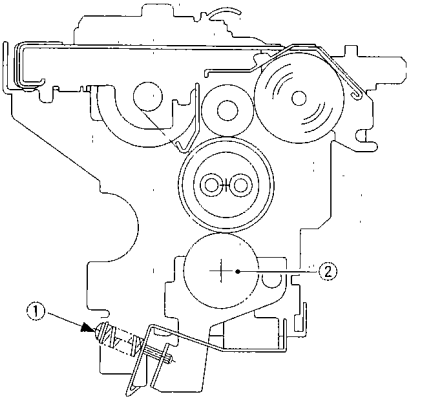
Figure 4-829

Note:
a and c represent measurements at 10 mm from both ends.

Dimension	Measurements
b	5.5 ± 0.3 mm
a—c	0.5 mm or less

Table 4-701

4) If the measurements are not as specified, turn the pressure adjusting screws located at the rear and the front of the fixing assembly to make adjustments.



① Pressure adjusting screw
② Lower fixing roller

Figure 4-830

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B. Fixing Cleaning Assembly

1. Outline

The fixing cleaning assembly is located at the top of the fixing assembly; it serves to clean the surface of the upper roller by keeping a cleaning belt impregnated with silicone oil in contact with the upper roller.

The cleaning belt is 15 m long, and has a red band at 2.5 m from its end.

Caution:

You must reset the reading 'WEB' in service mode whenever you have replaced the cleaning belt.

2. Removing the Fixing Assembly Cleaning Belt

1) Remove the fixing assembly from the copier.
2) Remove the two screws ①, and remove the fixing cleaning assembly ②.

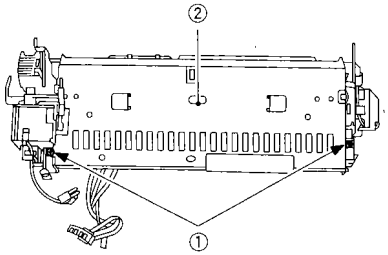

Figure 4-831

3) Insert a flat-blade screwdriver ③ into the stop plate ④, and release the pressure to the fixing assembly cleaning belt.

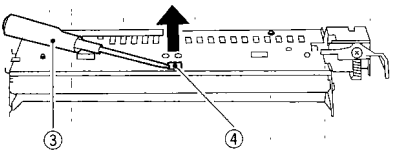

Figure 4-832

4) Turn the cleaning belt setting shafts ⑤ of the fixing cleaning assembly clockwise to remove the fixing assembly cleaning belt.

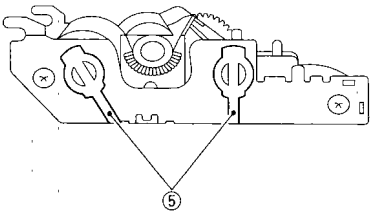

Figure 4-833

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3. Installing the Fixing Assembly Cleaning Belt

The service part for the fixing assembly cleaning belt consists of a feeding shaft, a take-up shaft, and a belt, all constructed as a single entity.

Install the part as you have removed it but in reverse order while keeping the following in mind:

- Wind the cleaning belt on the cleaning belt take-up shaft two to three times. At this time, makes sure that the face that comes into contact with the roller is impregnated with oil.

Caution:
You must make sure that the fixing belt is not wound askew and it is free of slack or wrinkling.

- After installing the fixing assembly cleaning belt, insert a flat-blade screwdriver into the fixing assembly cleaning belt drive shaft, and turn it counterclockwise until the cleaning belt is free of slack.

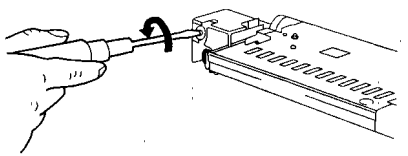

Figure 4-834

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IX. ELECTRICAL SYSTEM

A. Image Processor PCB

The image processor PCB is equipped with a built-in battery (BAT801). Keep the following in mind, since shorting both ends of the battery will lead to overheating.

1. When Replacing the Image Processor PCB

If you are sending the image processor PCB to a workshop or the factory, put it in a conductive bag with the plastic film used to protect the soldered face of the image processor PCB intact.

Use a conductive bag one side of which is transparent; keep the PCB so that its face with elements shows through the transparent side.

B. DC Power Supply PCB/DC Controller PCB

1. Removing the PCB

1) Remove the rear cover.
2) Disconnect all connectors from the DC power supply PCB/DC controller PCB.
3) Remove the harness retainer to free the harness.
4) Remove the four screws ①, and remove the DC power supply CB/DC controller PCB ②.

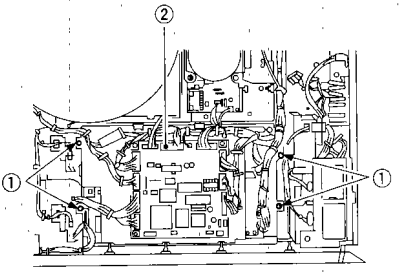

Figure 4-901

Caution:

The GP30F's DC controller PCB does not have a back-up RAM; therefore, unlike the conventional machines, you need not store data newly after replacing the DC controller PCB.

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C. High-Voltage Transformer

1. Removing the High-Voltage Transformer

1) Open the front door, and pull out the drum unit.
   Keep the feeding assembly released.
2) Remove the rear cover.
3) Remove the three screws, and remove the flywheel.
4) Disconnect the three connectors ①.
5) Remove the screw ②, and remove the grounding wire.
6) Remove the two screws ③, and remove the high-voltage transformer ④.

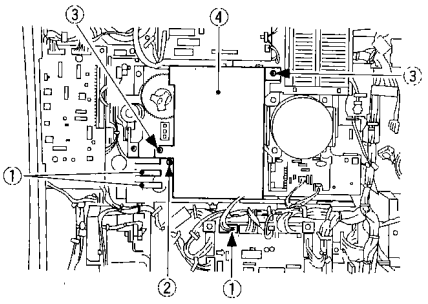

Figure 4-902

D. Relay

1) Remove the screw ① shown in Figure 4-903, and remove the relay mount.

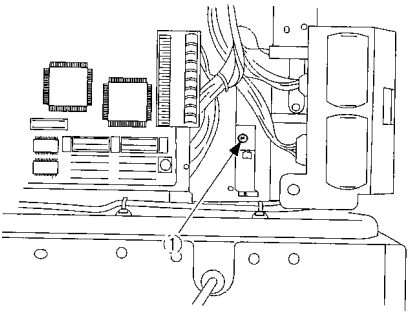

Figure 4-903

2) Remove the faston, and remove the relay.

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5) Fix the Control Card ④ to the copier using a screw (M4x12) ⑤; make sure that boss ⑥ is in the hole of the Control Card ④.

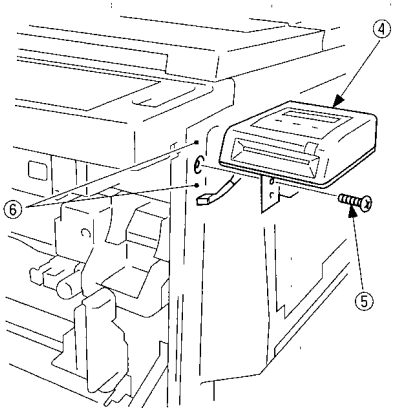

Figure 5-504

6) Connect the cable ⑦ of the Control Card to the connector on the copier.

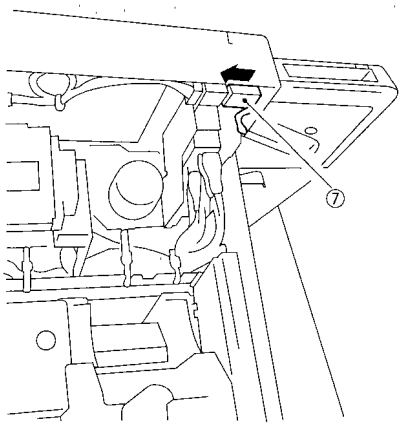

Figure 5-505

7) Connect the copier's power plug, turn on its power switch, and check the operation of the Control Card.
8) Install the inside left cover.

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I. PERIODICALLY REPLACED PARTS

Some parts of the copier must be replaced on a regular basis to maintain the machine's functions to a specific level; replace them according to the table regardless of their external appearance, since they will affect the performance of the machine to a large degree.

Schedule the replacement to coincide with the scheduled servicing visit closest to the specified lives.

as of end of May, 1995

No.	Part	Part No.	Q'ty	Life (copies)	Remarks
1	Transfer corona wire	FY3-0030-000	AR	30,000	100V
		FY3-0040-000	AR	30,000	115/220/240V
2	Ozone filter	FB1-6586-000	3	60,000	or, 1 yr
3	Static eliminator	FF5-1165-000	1	60,000	
4	Scanner cooing fan air filter	FB1-7121-000	1	180,000	or, 1 yr

Note:
The values above are estimates only and subject to change based on future data.

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II. CONSUMABLES AND DURABLES

Some of the parts of the copier may have to be replaced once or more over the period of warranty. Replace them when they fail using the table as a guide.

No.	Part			Part No.	Q'ty	Life (copies)	Remarks
1	Scanning lamp			FH7-3291-000	1	100,000	100/115V
2	Pick-up roller			FF5-1220-000	2	120,000	rear
				FF5-1221-000	2	120,000	front
3	Feeding roller			FB1-7061-000	2	120,000	
4	Separation roller			FB1-7060-000	2	120,000	
5	Manual feeding separation pad			FC1-9022-030	1	120,000	
6	Fixing cleaning belt			FA3-8908-000	1	120,000	
7	Upper fixing roller			FB2-6519-000	1	120,000	
8	Lower fixing roller			FB1-8767-000	1	120,000	
9	Insulating bush			FB1-6823-000	2	120,000	
10	Pre-exposure lamp			FG5-3833-000	1	120,000	
11	Upper fixing separation claw			FA9-0451-000	6	120,000	
12	Fixing heater	100V	Main heater	FH7-4339-000	1	300,000	
			Sub heater	FH7-4340-000	1		
		115V	Main heater	FH7-4341-000	1	300,000	
			Sub heater	FH7-4342-000	1		
		230V	Main heater	FH7-4343-000	1	300,000	
			Sub heater	FH7-4344-000	1	300,000	
13	Developing cylinder			FB1-6691-000	1	300,000	
14	Fixing thermistor			FH7-7341-000	1	300,000	
15	Lower fixing separation claw			FA2-9037-000	4	200,000	
16	Exhaust fan (FM2)			FH6-1156-000	1	15,000 hr	
17	Laser cooling fan (FM3)			FH6-1157-000	1	40,000 hr	
18	Backlight			FH7-3293-000	1	15,000 hr	

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III. SCHEDULED SERVICING FLOW

Note:
1. As a rule, provide scheduled servicing every 30,000 copies.
2. Check the Service Record before a visit, and take any parts expected for replacement.

Step	Work	Checks	Remarks
1	Meet the person in charge.	Check the general conditions.	
2	Record the counter reading.	Check the faulty copies.	
3	Make test copies.	Check the following: a. image density b. soiling on white areas c. character clarity d. leading edge margin e. faulty fixing/registraiton, soiled back f. counter operation	standards: 2.5 ±1.0 mm (DIRECT)
4	Clean the corona assemblies. • corona wire • shielding plate		Dry wipe with lint-free paper; then, use alcohol.
5	Clean the optical path. • original exposure reflecting plate • original exposure side reflecting plate • lens • No. 1, 2, 3 mirrors • dust-proofing glass sheets 1, 2 • standard white plate		Use a blower brush; if the dirt cannot be removed, use alcohol. DRY wipe.
6	Clean the transfer guide. • transfer guide (upper/lower) plate • transfer corona assembly guide rail		Remove the drum unit.

Cont'd

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Step	Work	Checks	Remarks
7	Clean the separation/feeding assembly: • feeding belt		After cleaning, install the drum unit.
8	Clean the fixing/delivery assembly: • inlet guide • separation claw (upper/lower) • cleaning belt (check)		 Use solvent. Use solvent.
9	Provide scheduled servicing to suit the number of copies made; see p. 6-5.		
10	Clean the copyboard glass.		Use alcohol.
11	Make test copies.		
12	Go through the Image Adjustment Basic Procedure.		
13	Make sample copies.		
14	Arrange the sample copies, and clean up the area around the machine.		
15	Record the final counter reading.		
16	Fill out the Service Sheet, and report to the person in charge.		

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IV. SCHEDULED SERVICING CHART

Caution:
Do not use solvents or oils other than those specified.

【△ : clean ● : replace × : lubricate □ : adjust ◎ : inspect】

Item	Part	Interval						Remarks
		Installation	every 30,000 copies	every 60,000 copies	every 180,000 copies	every 200,000 copies	1 yr	
Externals	Copyboard glass		△					Use alcohol.
	Ozone filter			●			●	Replace every 60,000 copies or 1 yr.
Scanner drive	Scanner rail			×				Apply lubricant.
Feeding assembly	Transfer guide assembly	△	△					Use a moist cloth.
	Feeding belt		△					
	Feeding assembly mount		△					
Optical path	Original exposure reflecting plate		△					
	No. 1 through 3 mirrors		△					
	Lens		△					
	Dust-proofing glass (2 pcs.)		△					
	Scanner cooling fan air filter		△		●		●	
	Original size sensor		△					

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[△ : clean ● : replace × : lubricate □ : adjust ◎ : inspect]

Item	Part	Interval						Remarks
		Installation	every 30,000 copies	every 60,000 copies	every 180,000 copies	every 200,000 copies	1 yr	
Corona assembly	Transfer corona wire		●					
	Transfer corona assembly		△					
	Static eliminator		△	●				
Developing assembly	Developing roll		△					
Fixing assembly	Upper fixing roller		△					
	Lower fixing roller		△					Use cleaning oil.
	Fixing assembly inlet					△		
	Separation claw (upper, lower)		△			●		

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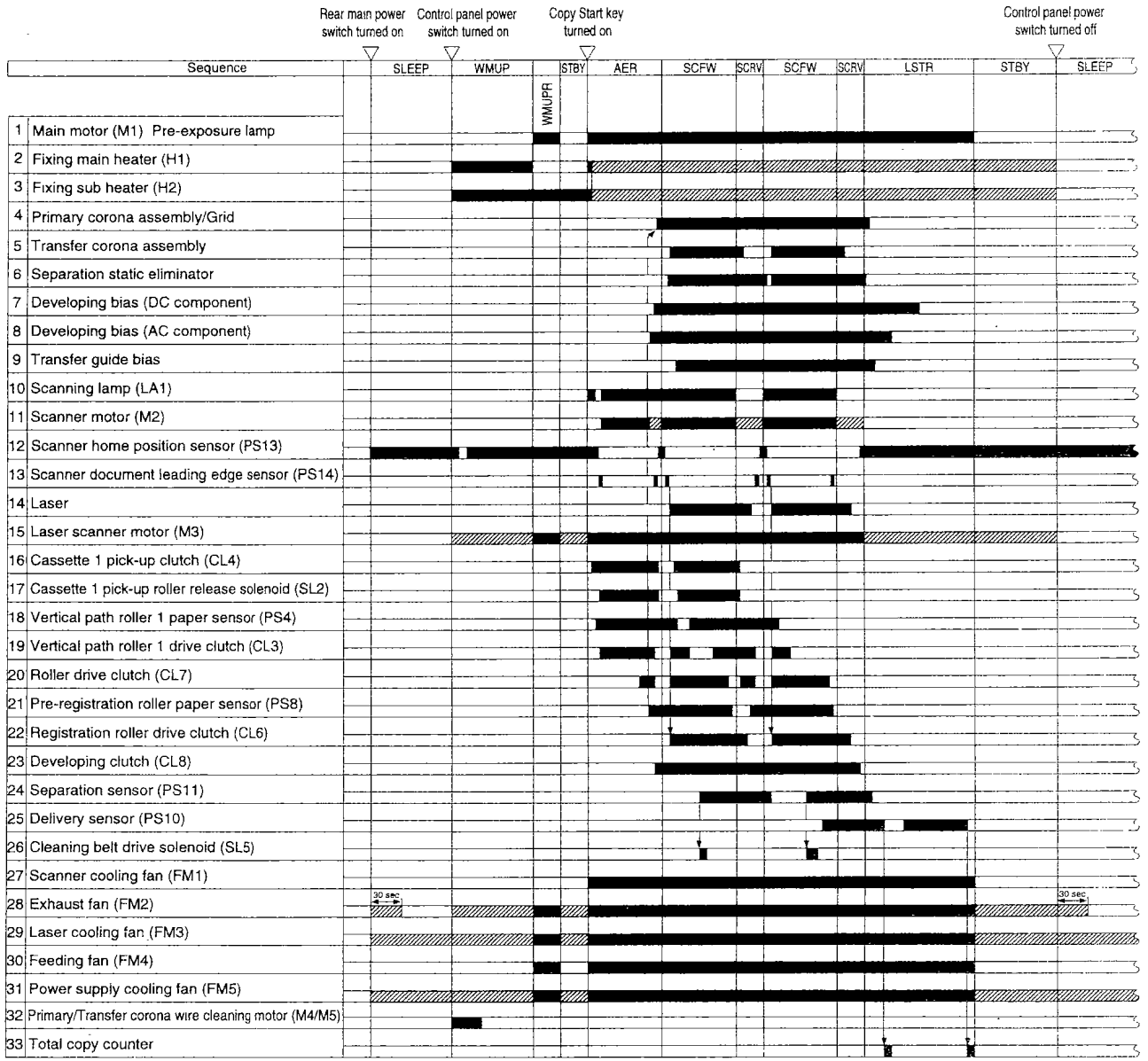
A. GENERAL TIMING CHART

A4, 2 copies, cassette 1, AE on


Rear main power switch turned on
Control panel power switch turned on
Copy Start key turned on
Control panel power switch turned off
Sequence
SLEEP
WMUP
WMUPR
STBY
AER
SCFW
SCRV
SCFW
SCRV
LSTR
STBY
SLEEP
1 Main motor (M1) Pre-exposure lamp
2 Fixing main heater (H1)
3 Fixing sub heater (H2)
4 Primary corona assembly/Grid
5 Transfer corona assembly
6 Separation static eliminator
7 Developing bias (DC component)
8 Developing bias (AC component)
9 Transfer guide bias
10 Scanning lamp (LA1)
11 Scanner motor (M2)
12 Scanner home position sensor (PS13)
13 Scanner document leading edge sensor (PS14)
14 Laser
15 Laser scanner motor (M3)
16 Cassette 1 pick-up clutch (CL4)
17 Cassette 1 pick-up roller release solenoid (SL2)
18 Vertical path roller 1 paper sensor (PS4)
19 Vertical path roller 1 drive clutch (CL3)
20 Roller drive clutch (CL7)
21 Pre-registration roller paper sensor (PS8)
22 Registration roller drive clutch (CL6)
23 Developing clutch (CL8)
24 Separation sensor (PS11)
25 Delivery sensor (PS10)
26 Cleaning belt drive solenoid (SL5)
27 Scanner cooling fan (FM1)
28 Exhaust fan (FM2)
29 Laser cooling fan (FM3)
30 Feeding fan (FM4)
31 Power supply cooling fan (FM5)
32 Primary/Transfer corona wire cleaning motor (M4/M5)
33 Total copy counter
30 sec
30 sec

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B. SIGNALS/ABBREVIATIONS TABLE

1. SIGNALS

ACBTP	AC DEVELOPING BIAS DRIVE command
APCON	AUTO POWER CONTROL ON command
BD	BEAM DETECT signal
C1LMD	CASSETTE 1 LIFTER MOTOR DRIVE command
C1LTP	CASSETTE 1 LIFTER POSITION signal
C1PD	CASSETTE 1 PAPER DETECTION signal
C1PPW	CASSETTE 1 PAPER WIDTH signal
C1SZ1	CASSETTE 1 PAPER LENGTH 1 signal
C1SZ2	CASSETTE 1 PAPER LENGTH 2 signal
C2LMD	CASSETTE 2 LIFTER MOTOR DRIVE command
C2LTP	CASSETTE 2 LIFTER POSITION signal
C2PD	CASSETTE 2 PAPER DETECTION signal
C2PPW	CASSETTE 2 PAPER WIDTH signal
C2SZ1	CASSETTE 2 PAPER LENGTH 1 signal
C2SZ2	CASSETTE 2 PAPER LENGTH 2 signal
CBSS	COPYBOARD COVER CLOSED signal
CLD1	CASSETTE 2 PICK-UP ROLLER CLUTCH DRIVE command
CLD2	VERTICAL PATH ROLLER 2 CLUTCH DRIVE command
CLD3	VERTICAL PATH ROLLER 1 CLUTCH DRIVE command
CLD4	CASSETTE 1 PICK-UP ROLLER CLUTCH DRIVE command
CLD7	MULTIFEED ROLLER CLUTCH DRIVE command
CLD8	REGISTRATION ROLLER CLUTCH DRIVE command
CLD9	PRE-REGISTRATION ROLLER CLUTCH DRIVE command
CLD10	DEVELOPING CLUTCH DRIVE command
CLK	SCANNER MOTOR CLOCK signal
CLKP	MAIN MOTOR CLOCK signal
DCBC	DC DEVELOPING BIAS CONTROL command
DSZ1	DOCUMENT SIZE DETECTION signal 1
DSZ2	DOCUMENT SIZE DETECTION signal 2
DSZ3	DOCUMENT SIZE DETECTION signal 3
DSZ4	DOCUMENT SIZE DETECTION signal 4
FM1D	SCANNER COOLING FAN (FM1) DRIVE command
FMD2	EXHAUST FAN (FM2) DRIVE command
FMD3	LASER COOLING FAN (FM3) DRIVE command
FMD4	FEEDER FAN (FM4) DRIVE command
FMSC3	LASER COOLING FAN (FM3) SPEED CONTROL command
FS	FS command
HVGD	GRID BIAS CONTROL command (analog)
HVSCT	SEPARATION CORONA CURRENT CONTROL signal (analog)
HVTCT	TRANSFER CORONA CURRENT CONTROL signal (analog)
HVTPC	PRIMARY CORONA CURRENT CONTROL signal (analog)
LAERR	SCANNING LAMP ERROR signal
LFDO	LEFT DOOR OPEN signal
LINT	LIGHT INTENSITY signal
LMD	LASER MOTOR DRIVE command
LMH	LASER MOTOR HIGH-SPEED command
LMRDY	LASER MOTOR READY signal
MLOCK	MAIN MOTOR LOCK signal
SLOCK	SCANNER LOCK signal
LRD	LAMP REGULATOR DRIVE command
LSRD	LASER DRIVE command
MFPD	MULTIFEEDER PAPER DETECTION signal
MFPW	MULTIFEEDER PAPER WIDTH signal
MHRD	MAIN HEATER DRIVE command
MMCLK	MAIN MOTOR CLOCK signal
MMD	MAIN MOTOR DRIVE command
PCLHP	PRIMARY CORONA WIRE CLEANER HP signal
PCLMF	PRIMARY CORONA WIRE CLEANER FORWARD command
PCLMR	PRIMARY CORONA WIRE CLEANER REVERSE command
PCLRP	PRIMARY CORONA WIRE CLEANER RP signal
PDP1	PAPER DETECTION signal 1
PDP2	PAPER DETECTION signal 2
PDP3	PAPER DETECTION signal 3
PDP4	PAPER DETECTION signal 4
PDP5	PAPER DETECTION signal 5
PDP8	PAPER DETECTION signal 8
PDP9	PAPER DETECTION signal 9
PDP10	PAPER DETECTION signal 10
PDP11	PAPER DETECTION signal 11
PDP12	PAPER DETECTION signal 12
PEXP	PRE-CONDITIONING EXPOSURE LAMP LIT command
PWOFF	POWER SWITCH OFF command
RDOP	RIGHT DOOR OPEN signal
REMOTE	DC POWER SUPPLY CHANGE command
S/H	SAMPLE HOLD signal
SCDP	SCANNER AT LEADING EGDE POSITION signal
SCFW	SCANNER FORWARD command
SCHP	SCANNER HOME POSITION signal
SCMD	SCANNER MOTOR DRIVE command
SCRC0	REPRODUCTION RATIO SELECT command 0
SCRC1	REPRODUCTION RATIO SELECT command 1
SCSC	SCANNER MOTOR SPEED CONTROL command
SEL	SELECT command
SH	CCD SHIFT command
SHRD	SUB HEATER DRIVE command
SL1D	CASSETTE 2 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
SL2D	CASSETTE 1 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
SL3D	MULTIFEED ROLLER SOLENOID DRIVE command
SL5D	CLEANING BELT DRIVE SOLENOID command
SRA1	SSR ACTIVE 1 signal
SRA2	SSR ACTIVE 2 signal
SRMOD	SERVICE MODE SWITCH signal
TCLHR	TRANSFER CORONA WIRE CLEANER HP signal
TCLMF	TRANSFER CORONA WIRE CLEANER FORWARD command
TCLMR	TRANSFER CORONA WIRE CLEANER REVERSE command
TCLRP	TRANSFER CORONA WIRE CLEANER RP signal
TCNTD	TOTAL COUNTER DRIVE command
TEP	TONER OUT signal
TGBON	TRANSFER GUIDE BIAS ON command
TH1	FIXING THERMISTOR signal
VRPHC	VERTICAL PATH MOTOR DRIVE command

2. ABBREVIATIONS

AER	AE ROTATION
CDTCT	COLOR DETECTION SCANNING
INTR	INITIAL ROTATION
LSTR	LAST ROTATION
PR-SCAN	PRE-SCANNING
SCFW	SCANNER FORWARD
SCRV	SCANNER REVERSE
SLEEP	SLEEP
STBY	STANDBY
WMUP	WARM UP
WMUPR	WARM UP ROTATION

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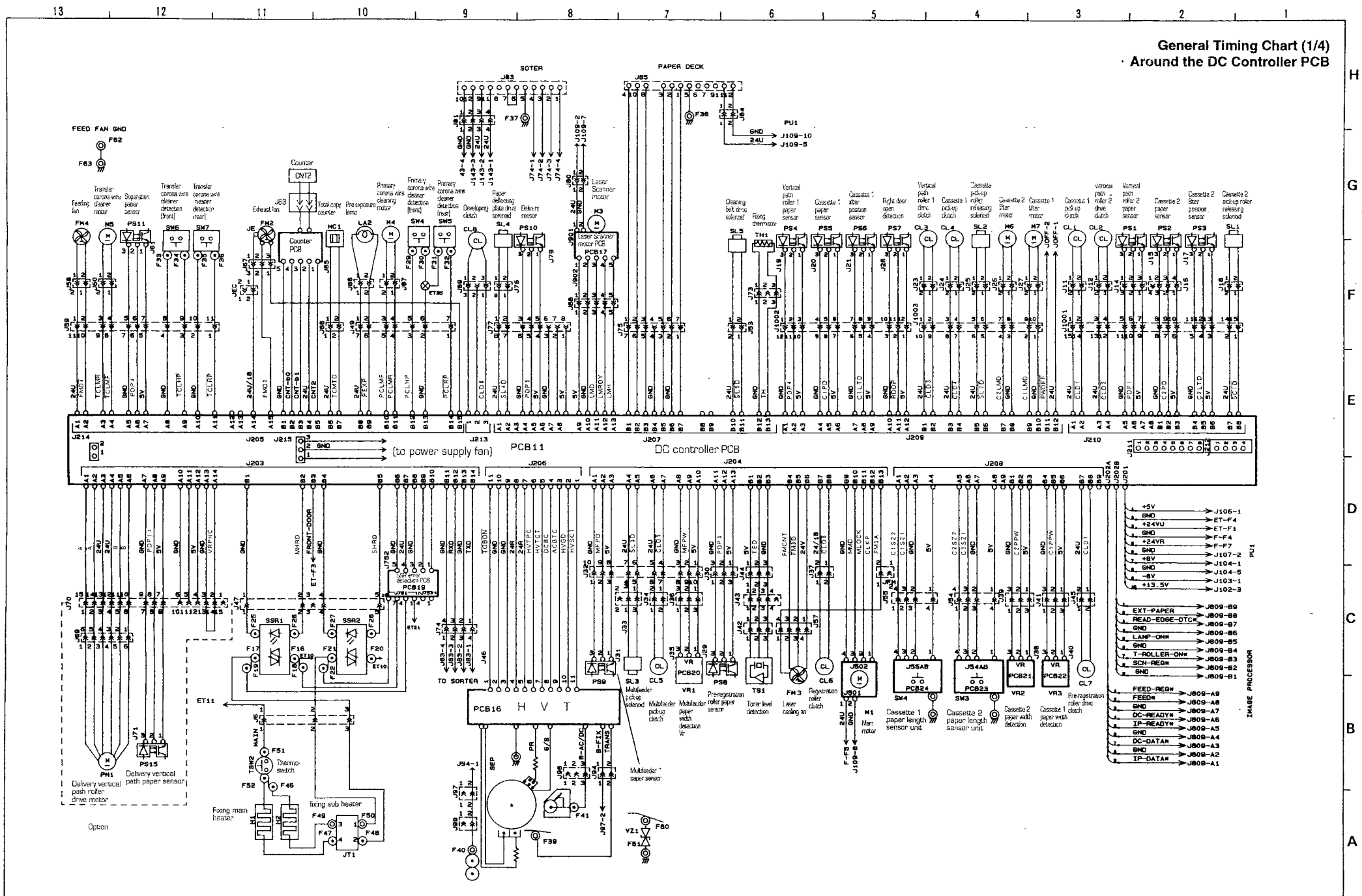
General Timing Chart (1/4)
· Around the DC Controller PCB



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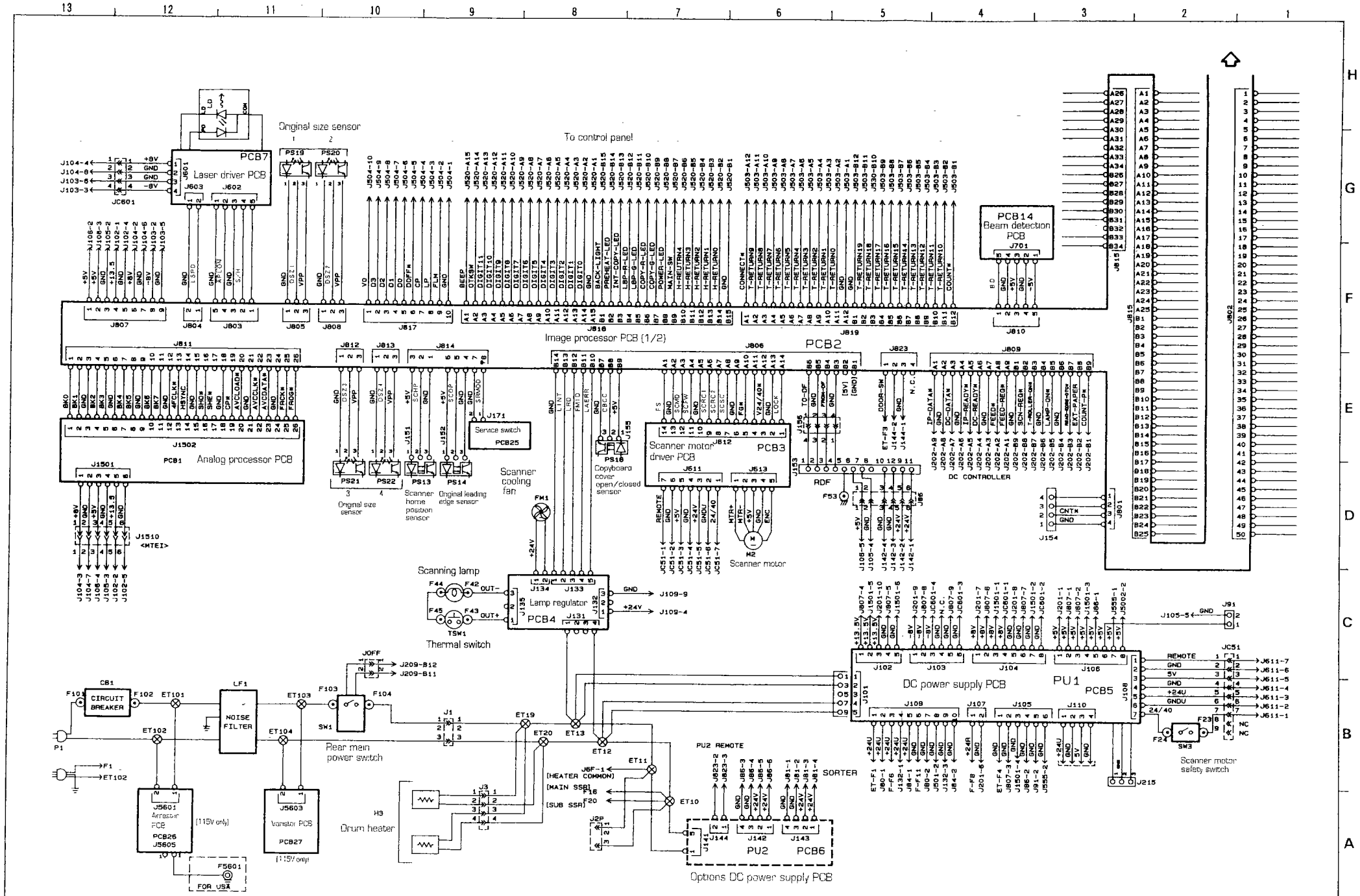
General Circuit Diagram (2/4)
· Around the Image Processor PCB



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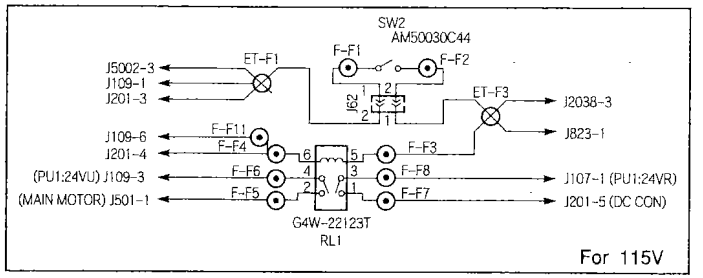
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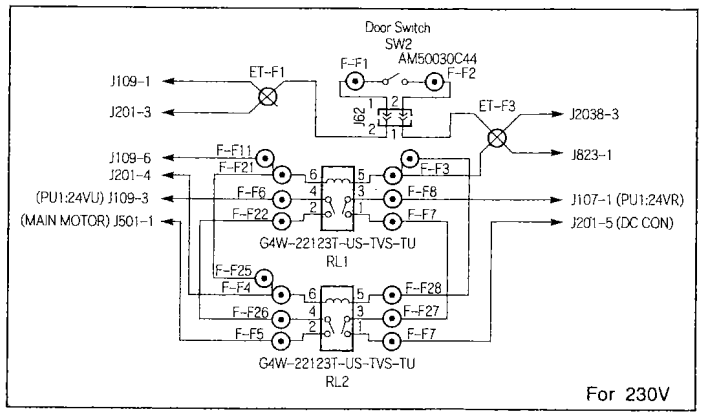
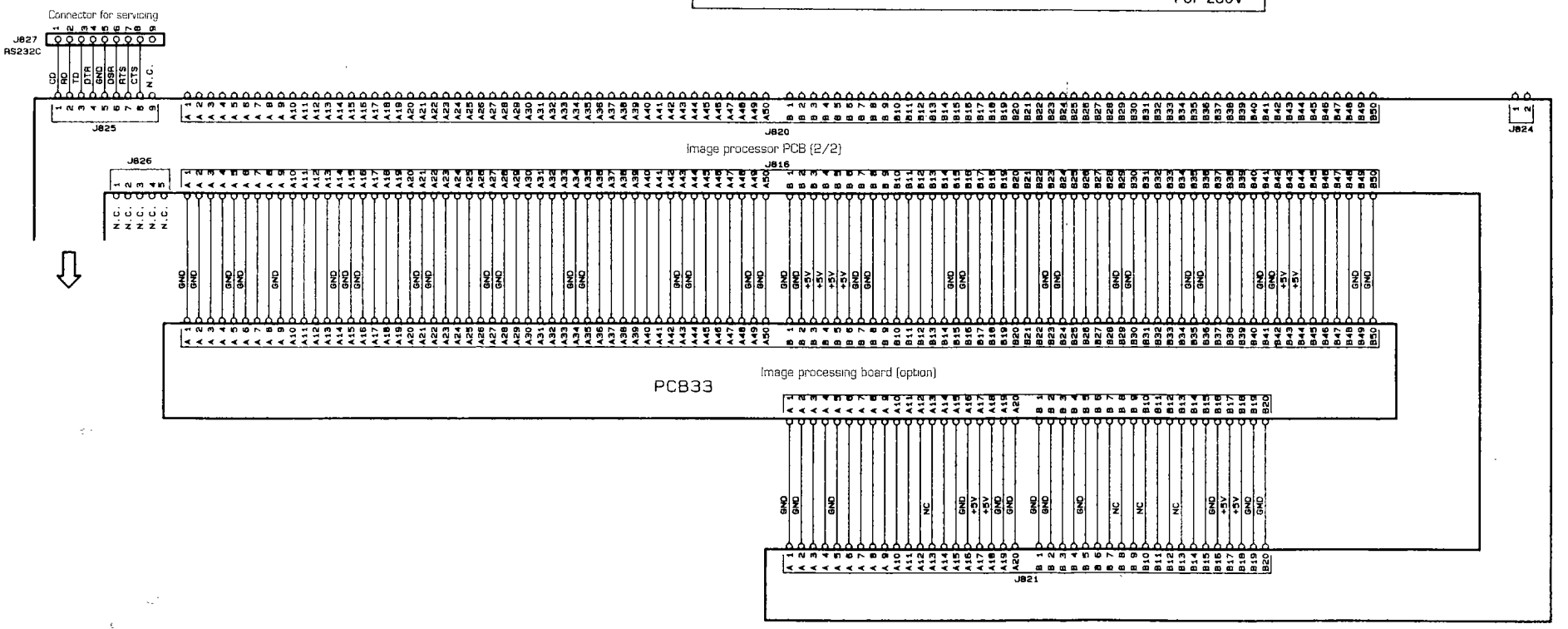
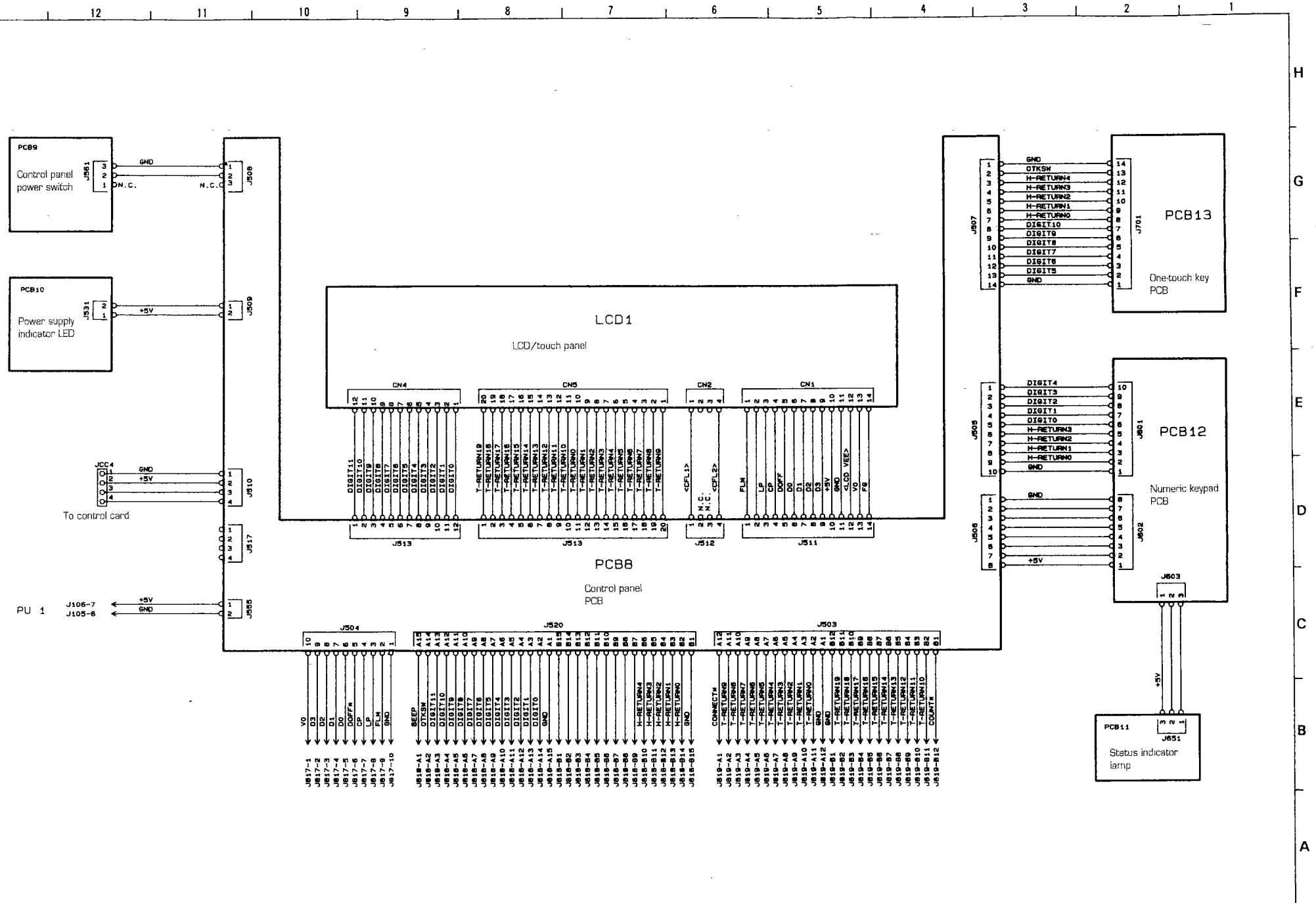
AM50030C44
J5002-3
J109-1
J201-3
ET-F1
F-F1
F-F2
J62
ET-F3
J2038-3
J823-1
J109-6
J201-4
F-F11
F-F4
F-F3
(PU1:24VU) J109-3
F-F6
F-F8
J107-1 (PU1:24VR)
(MAIN MOTOR) J501-1
F-F5
F-F7
J201-5 (DC CON)
G4W-22123T
RL1
For 115V


Door Switch
SW2
AM50030C44
J109-1
J201-3
ET-F1
F-F1
F-F2
J62
ET-F3
J2038-3
J823-1
J109-6
J201-4
F-F11
F-F21
F-F3
(PU1:24VU) J109-3
F-F6
F-F8
J107-1 (PU1:24VR)
(MAIN MOTOR) J501-1
F-F22
F-F7
J201-5 (DC CON)
G4W-22123T-US-TVS-TU
RL1
F-F25
F-F4
F-F28
F-F26
F-F27
F-F5
F-F7
G4W-22123T-US-TVS-TU
RL2
For 230V


Connector for servicing
J827
RS232C
CD
RD
TD
DTR
GND
DSR
RTS
CTS
N.C.
J825
J820
J824
Image processor PCB (2/2)
J826
J816
N.C.
GND
+5V
PCB33
Image processing board (option)
J821
NC

General Circuit Diagram (4/4)
· Around the Control Panel



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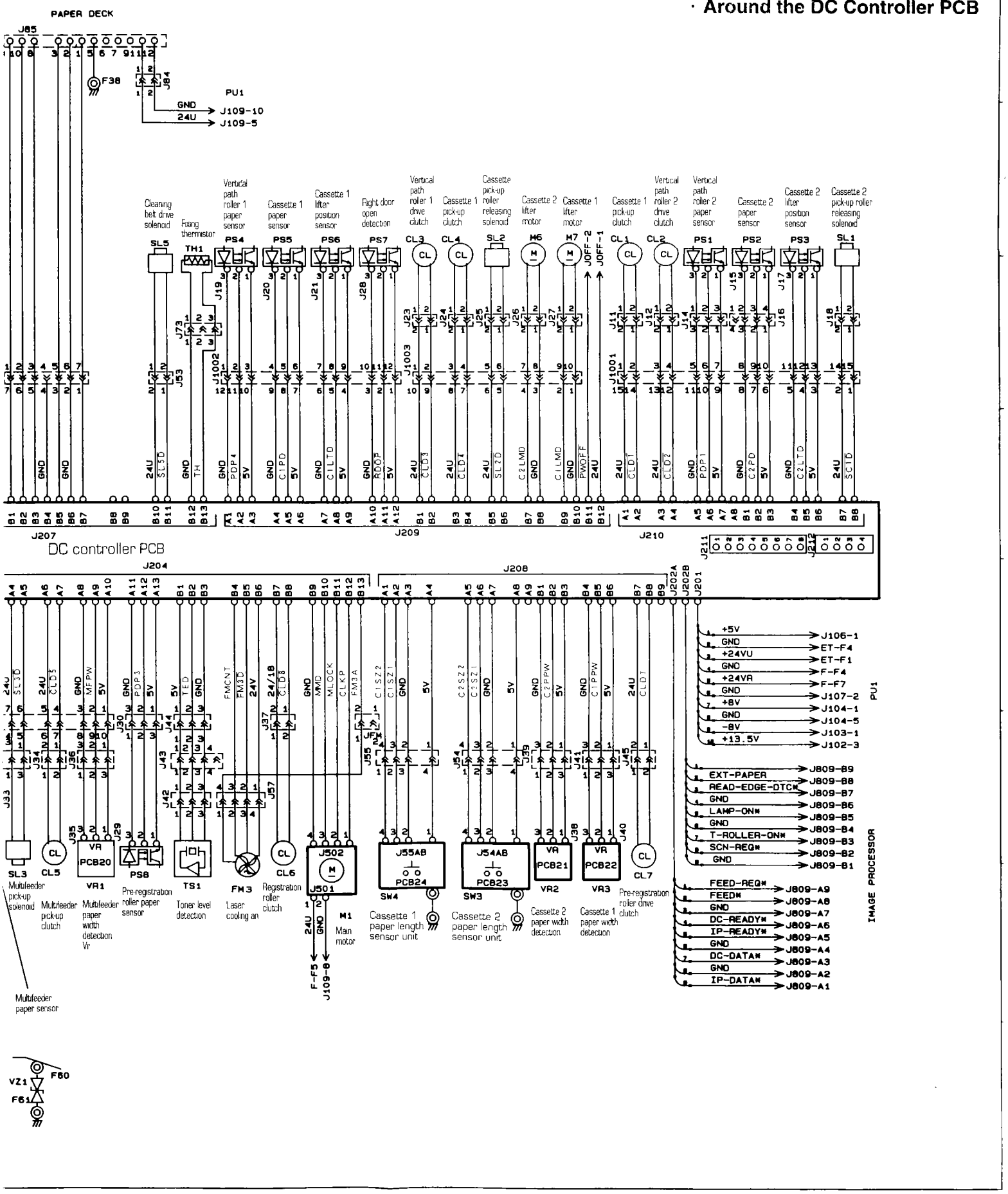
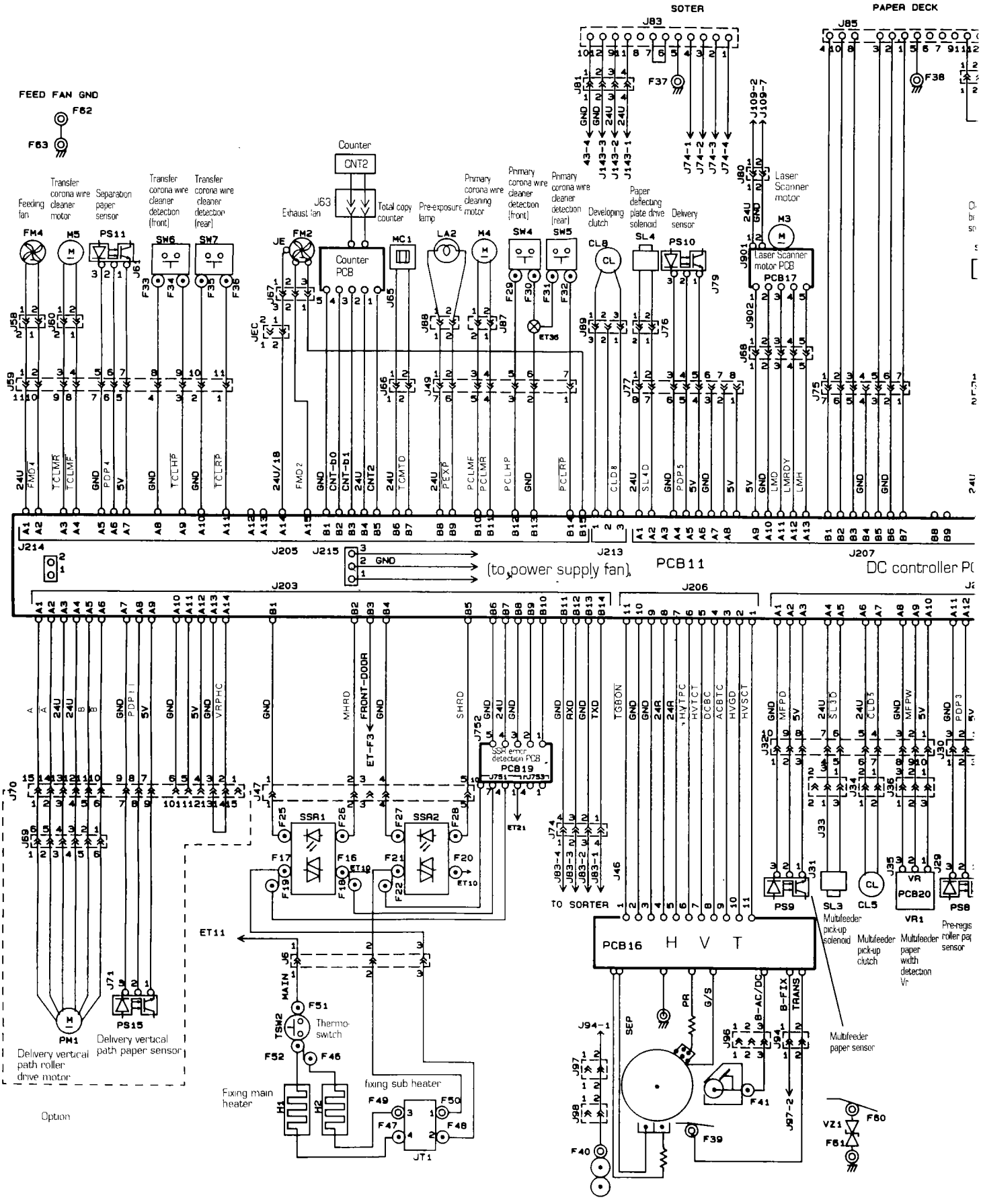
General Timing Chart (1/4)
· Around the DC Controller PCB





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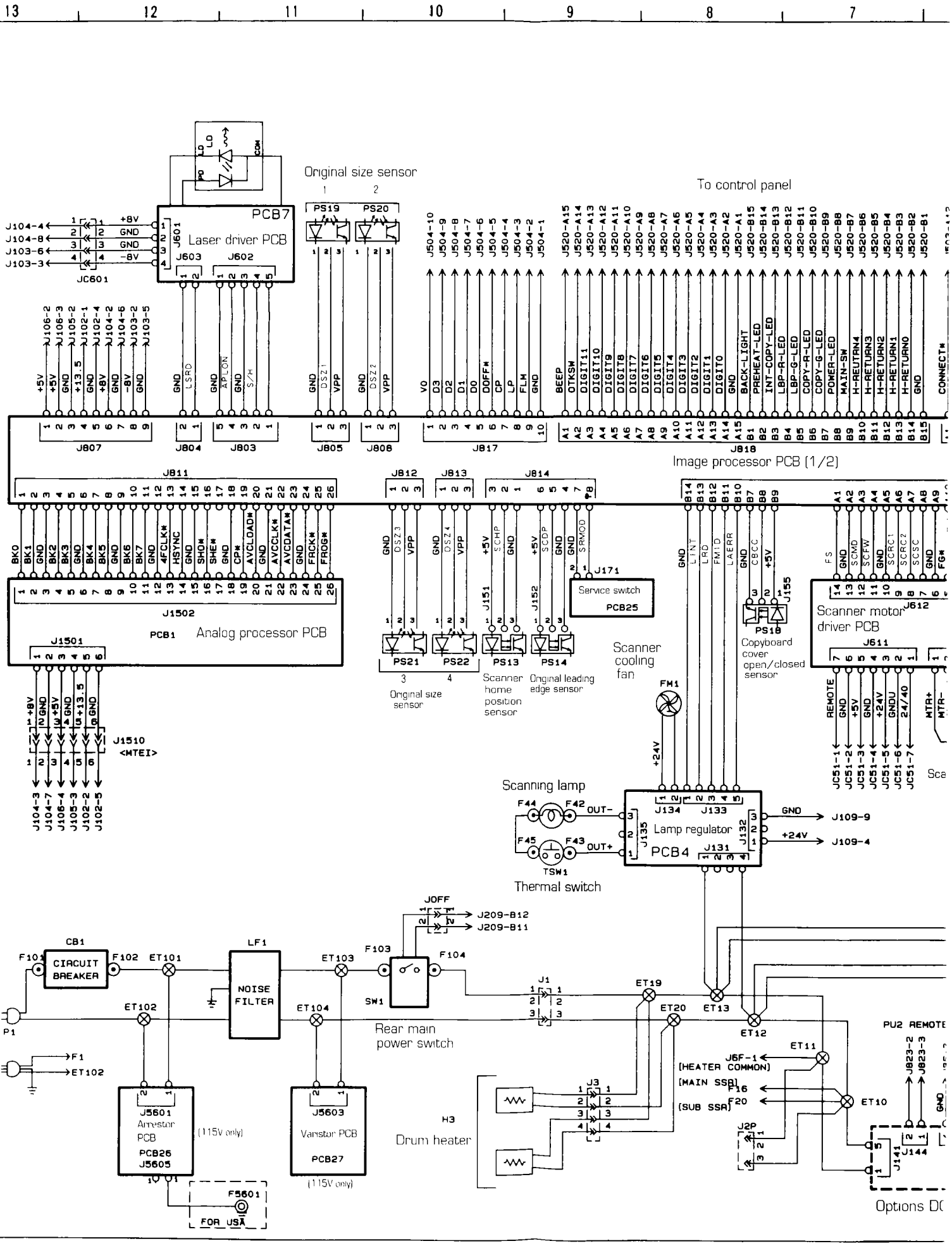
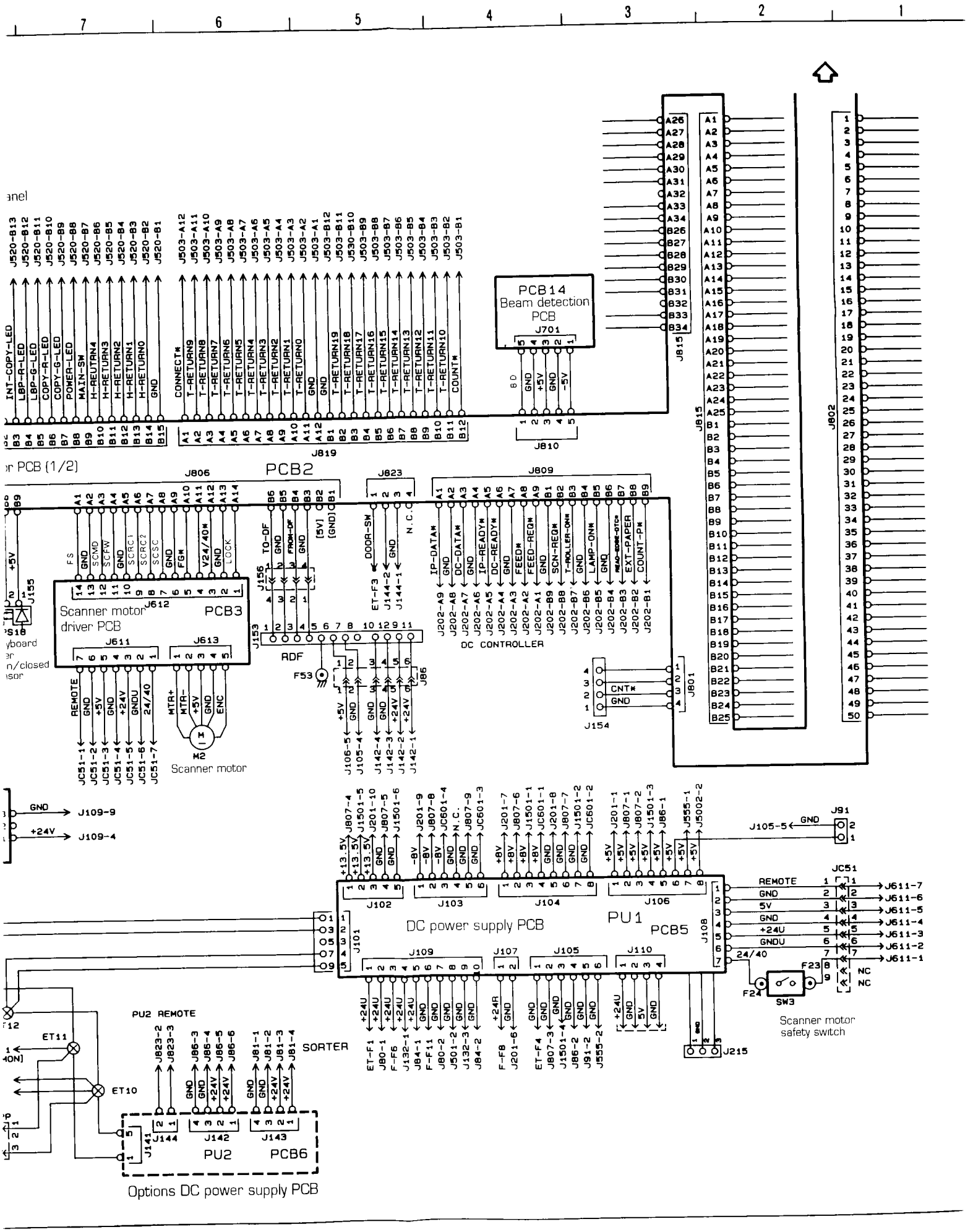
ieneral Circuit Diagram (2/4)
Around the Image Processor PCB





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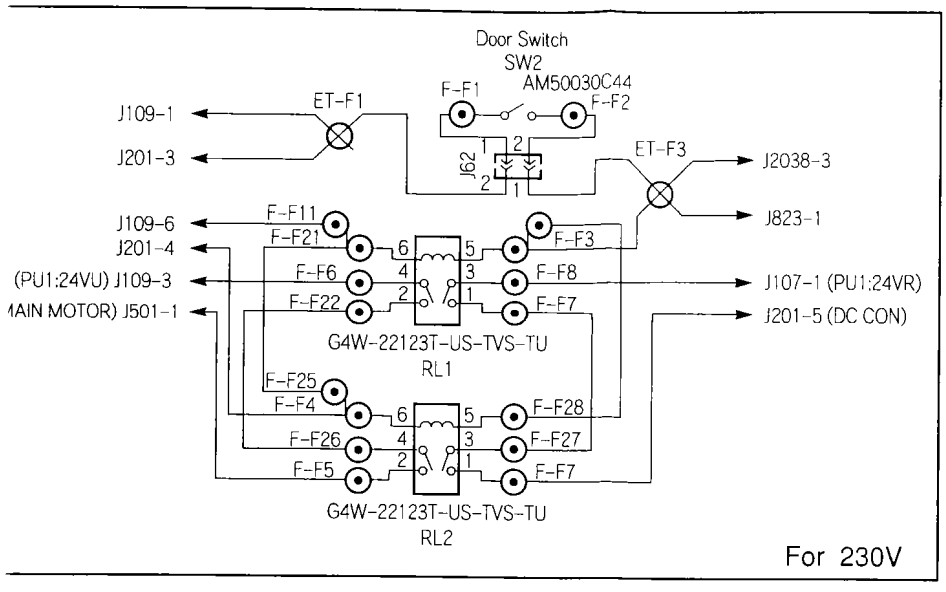
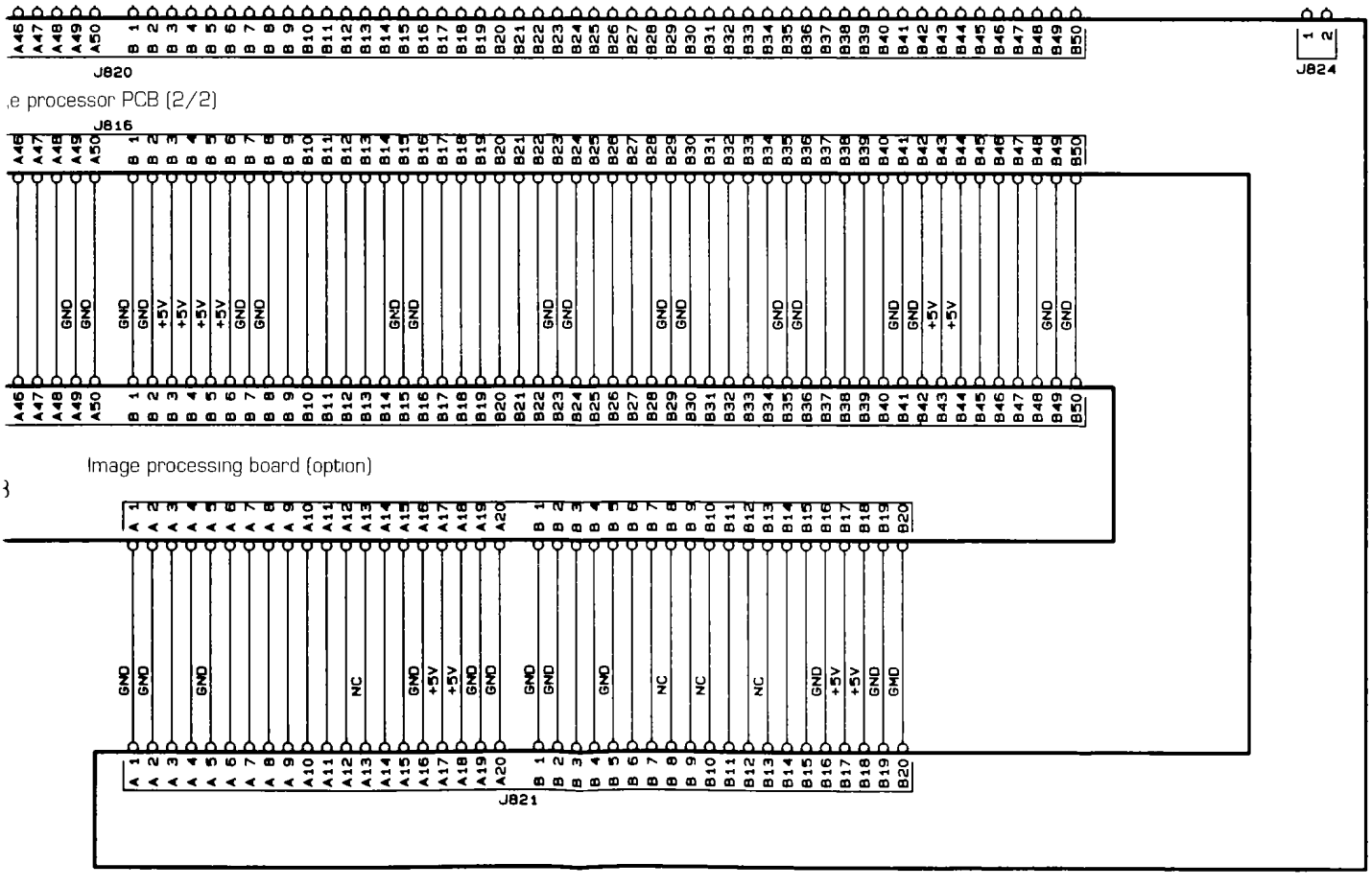
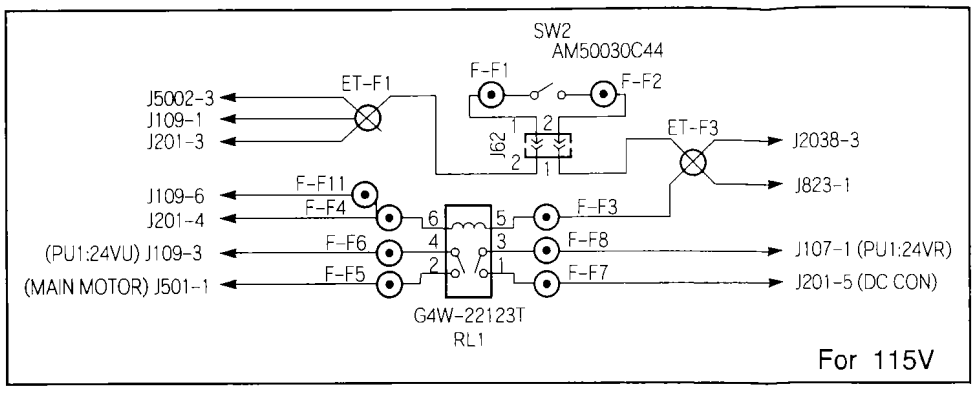
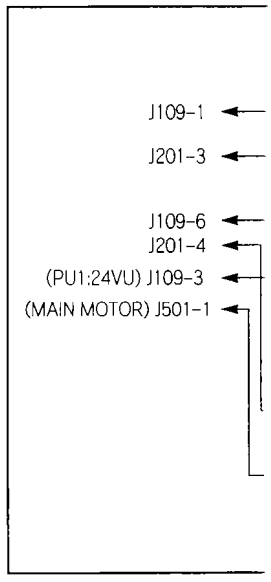
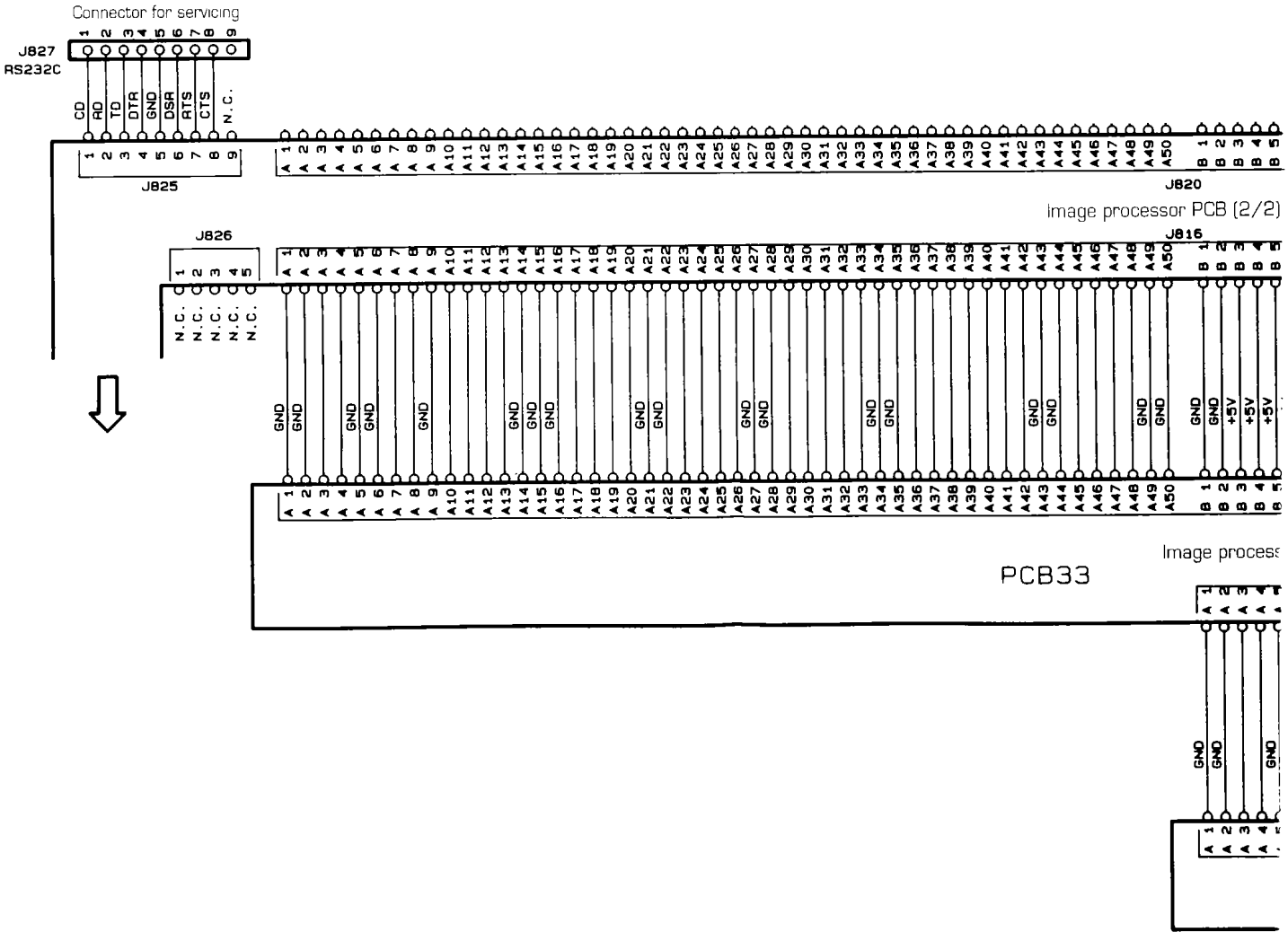

Door Switch
SW2
AM50030C44
F-F1
F-F2
J62
ET-F1
ET-F3
J109-1
J201-3
J2038-3
J823-1
J109-6
J201-4
(PU1:24VU) J109-3
MAIN MOTOR) J501-1
F-F11
F-F21
F-F3
F-F6
F-F8
F-F22
F-F7
J107-1 (PU1:24VR)
J201-5 (DC CON)
G4W-22123T-US-TVS-TU
RL1
F-F25
F-F4
F-F28
F-F26
F-F27
F-F5
F-F7
G4W-22123T-US-TVS-TU
RL2
For 230V


J820
J824
e processor PCB (2/2)
J816
Image processing board (option)
J821







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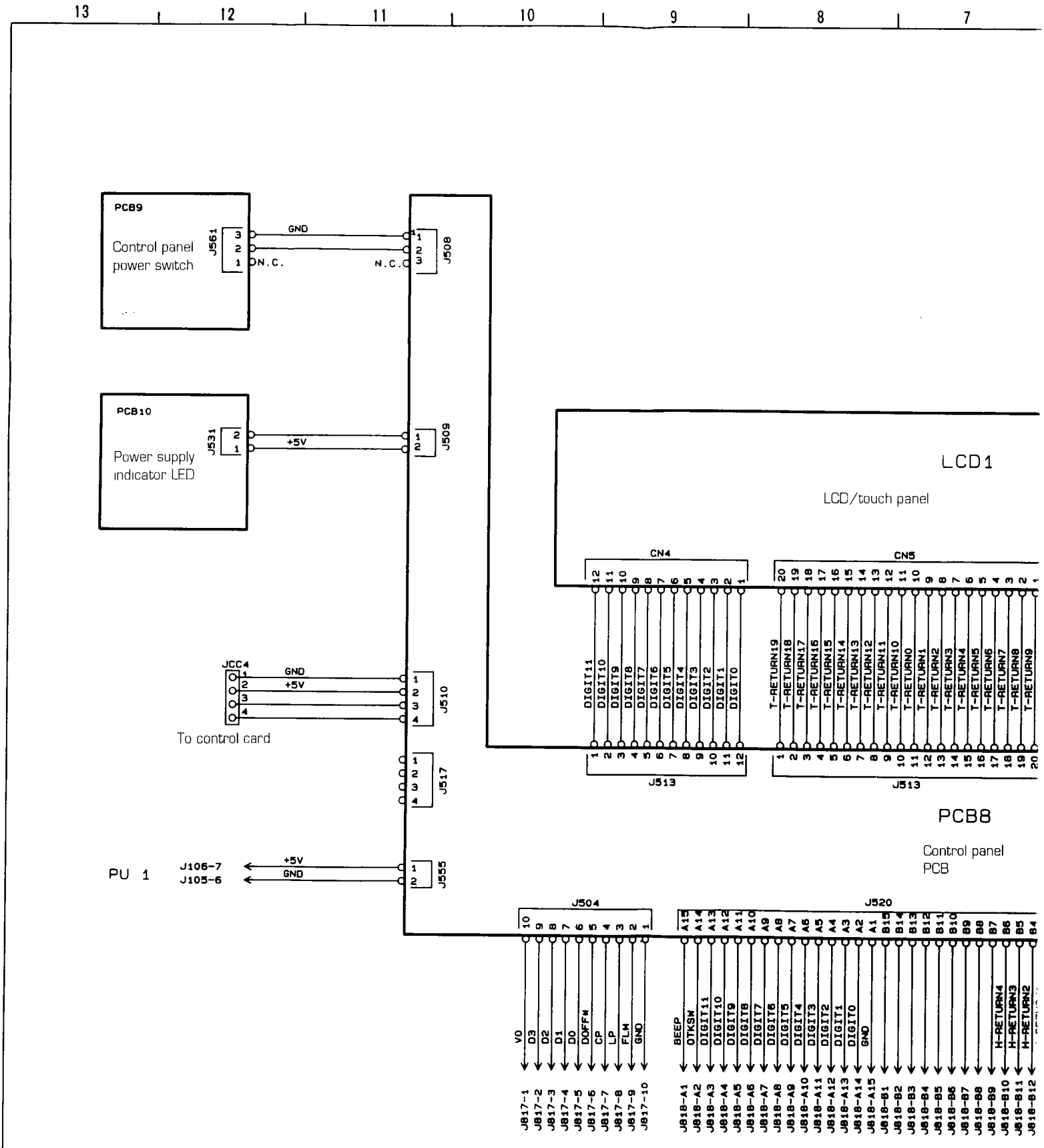
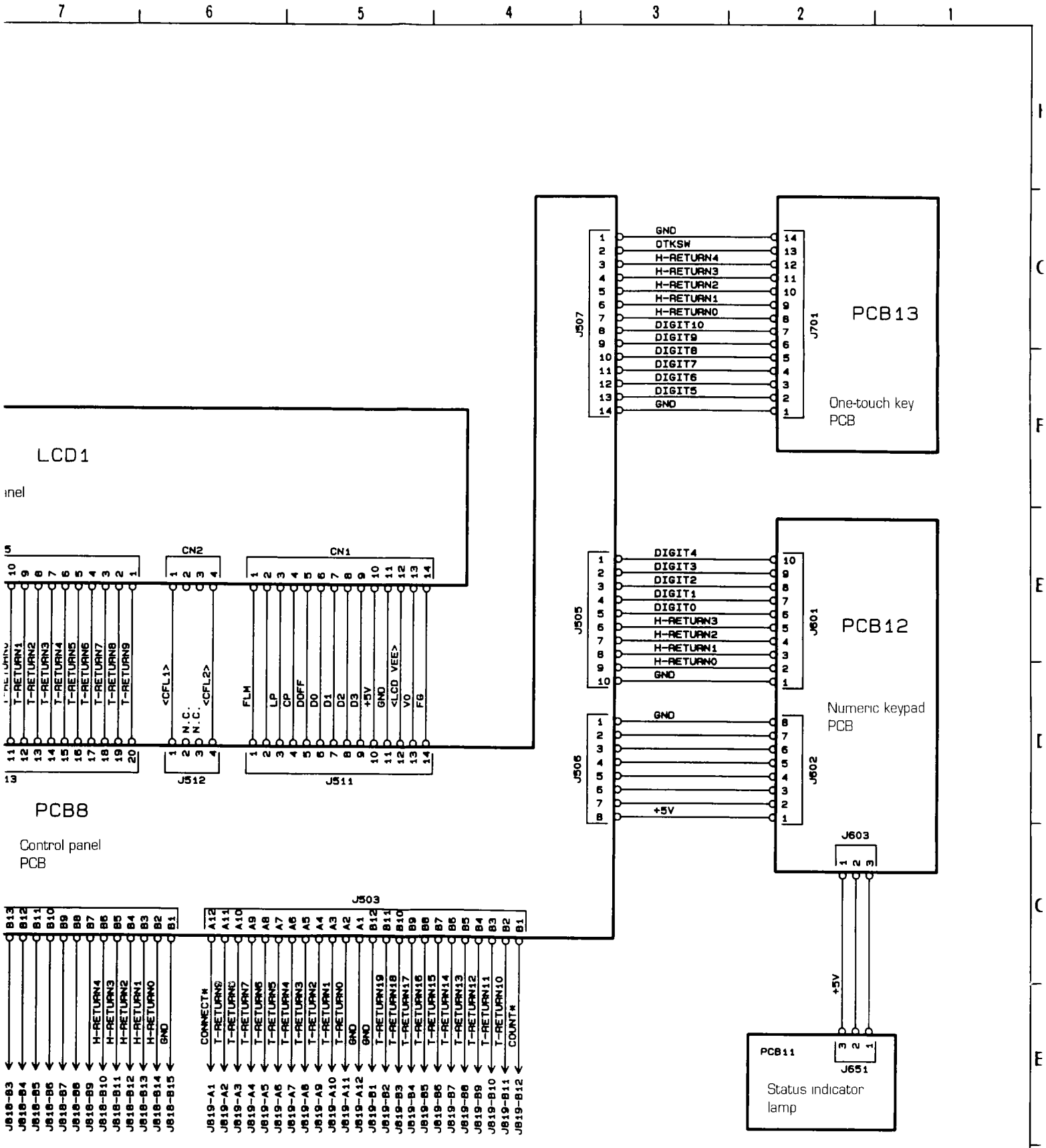
General Circuit Diagram (4/4)
· Around the Control Panel





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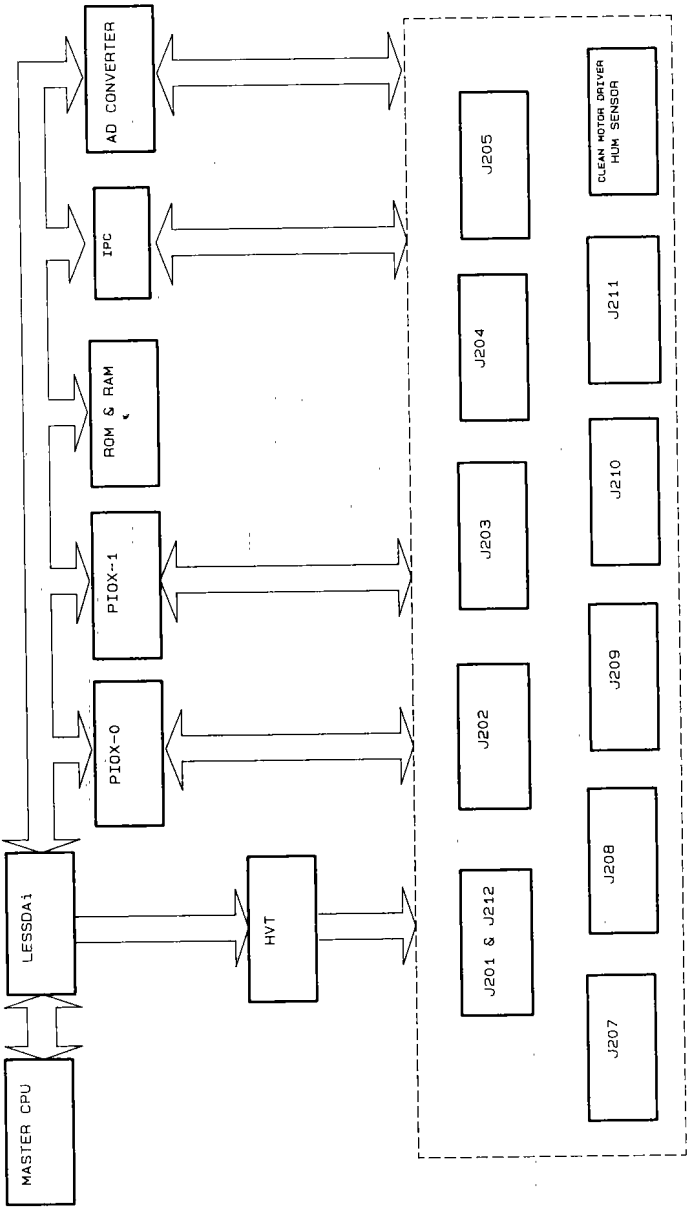
D. DC CONTROLLER CIRCUIT DIAGRAM

DC Controller Circuit Diagram (1/20)



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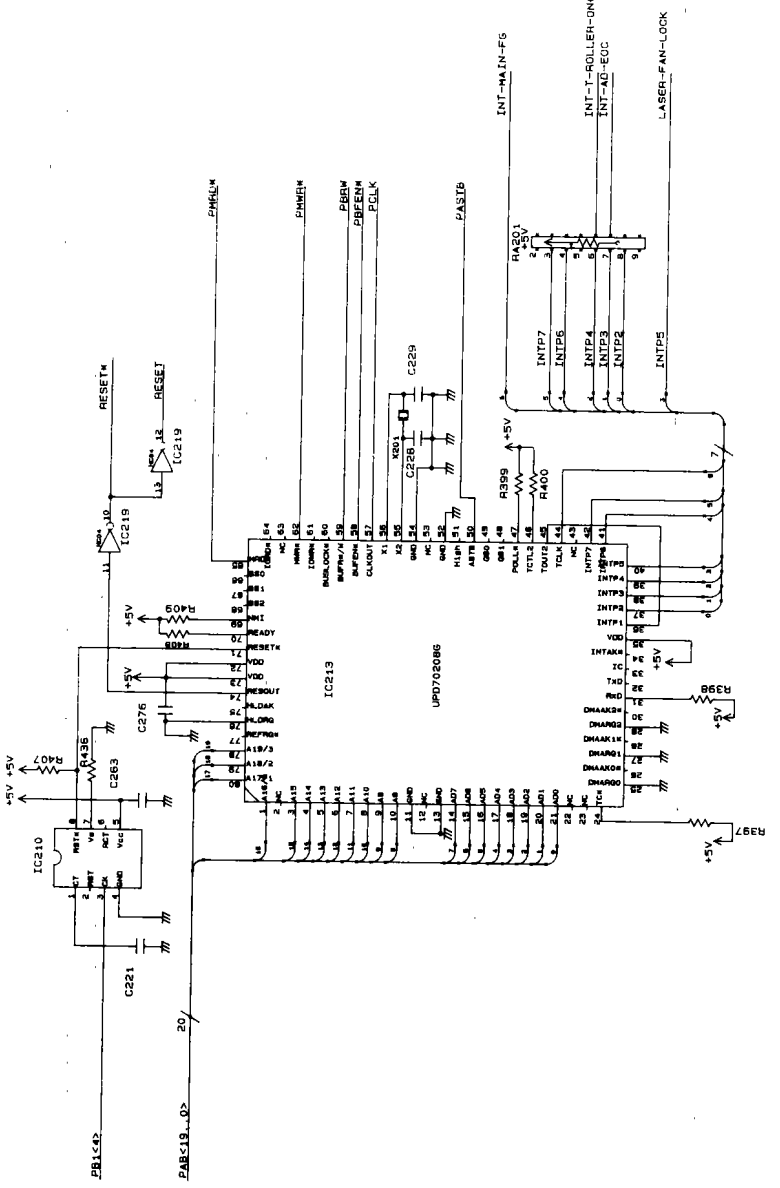

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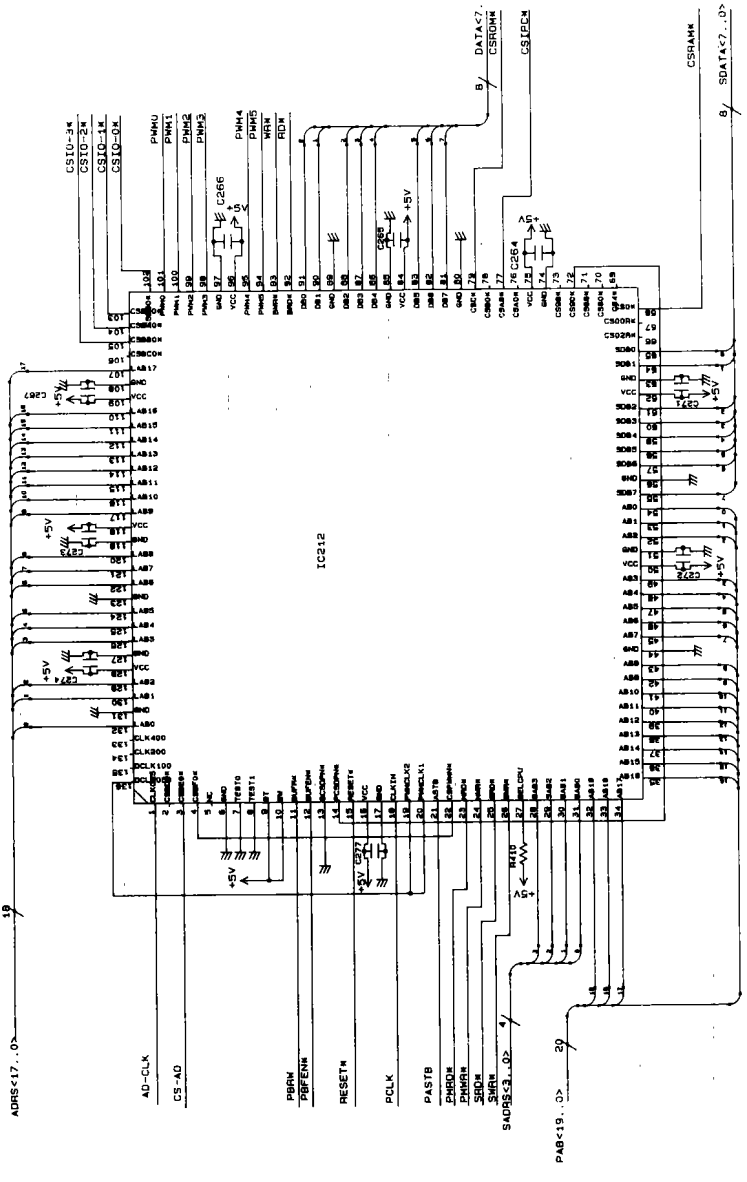

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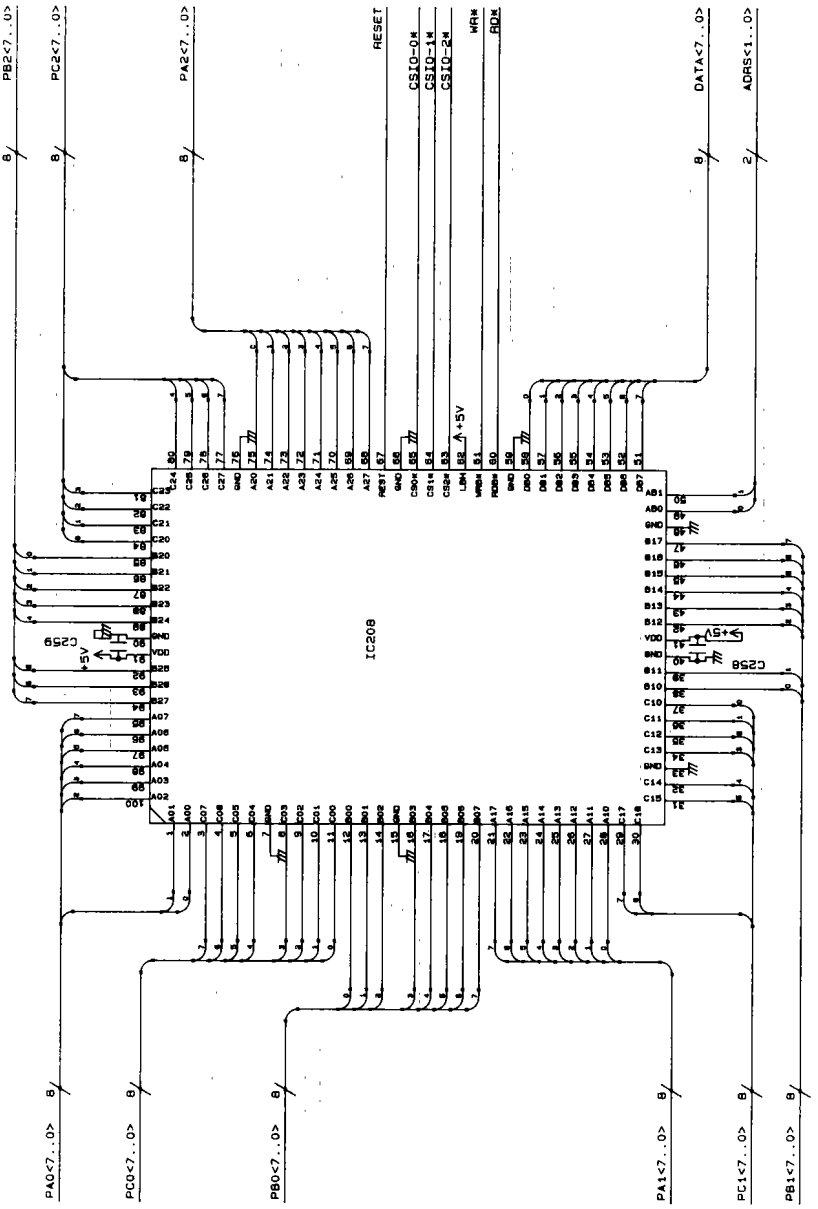

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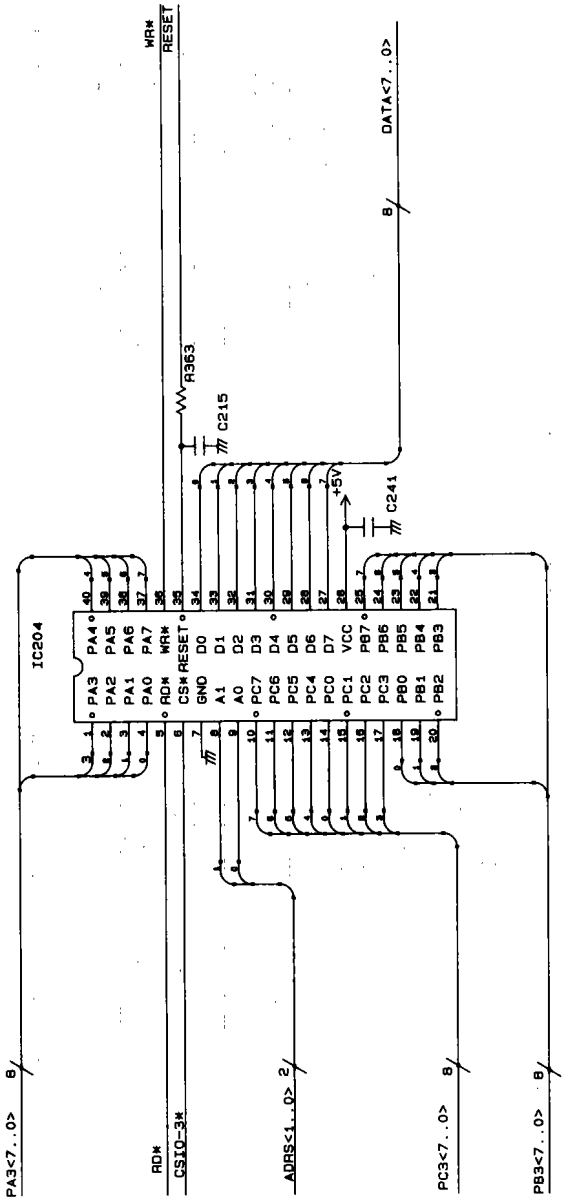

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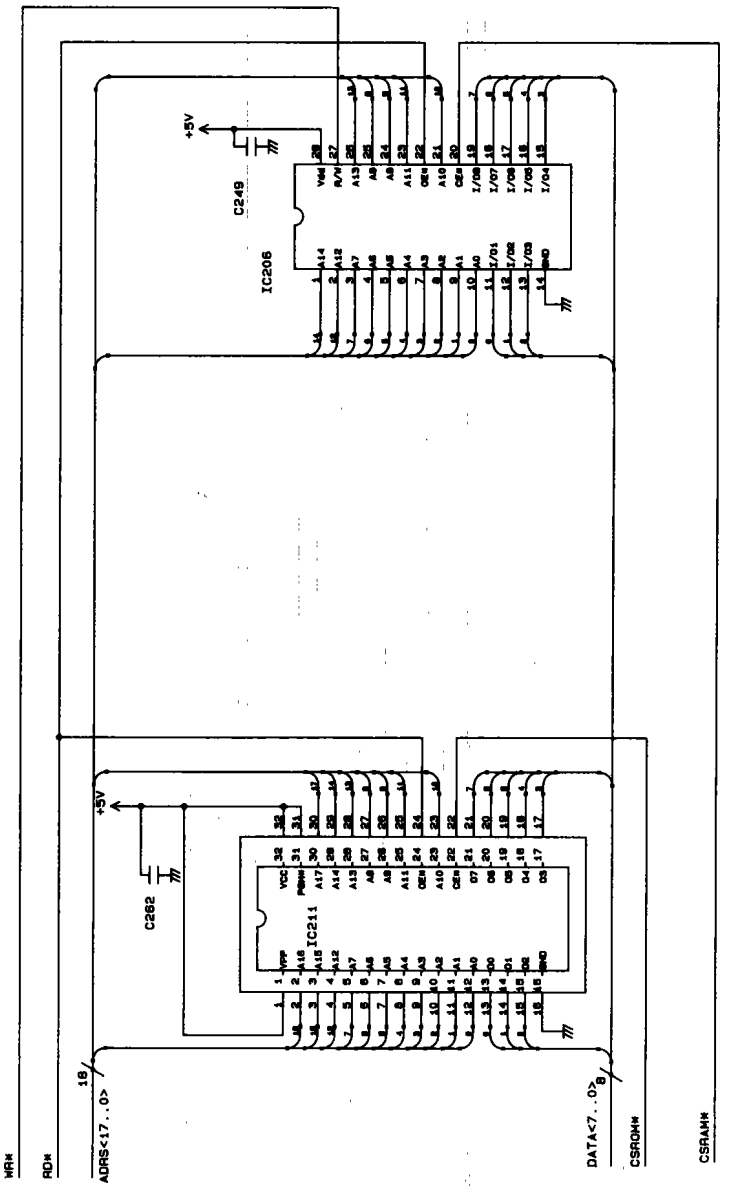

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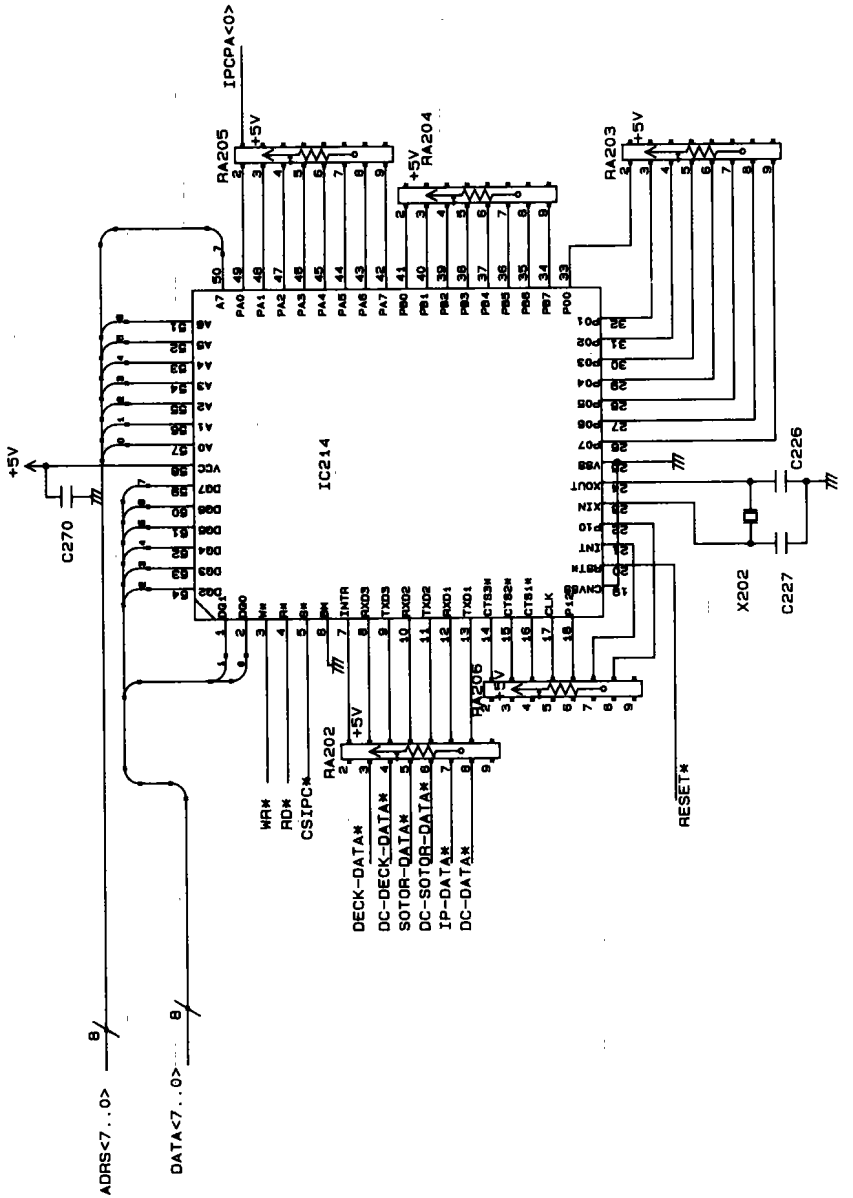

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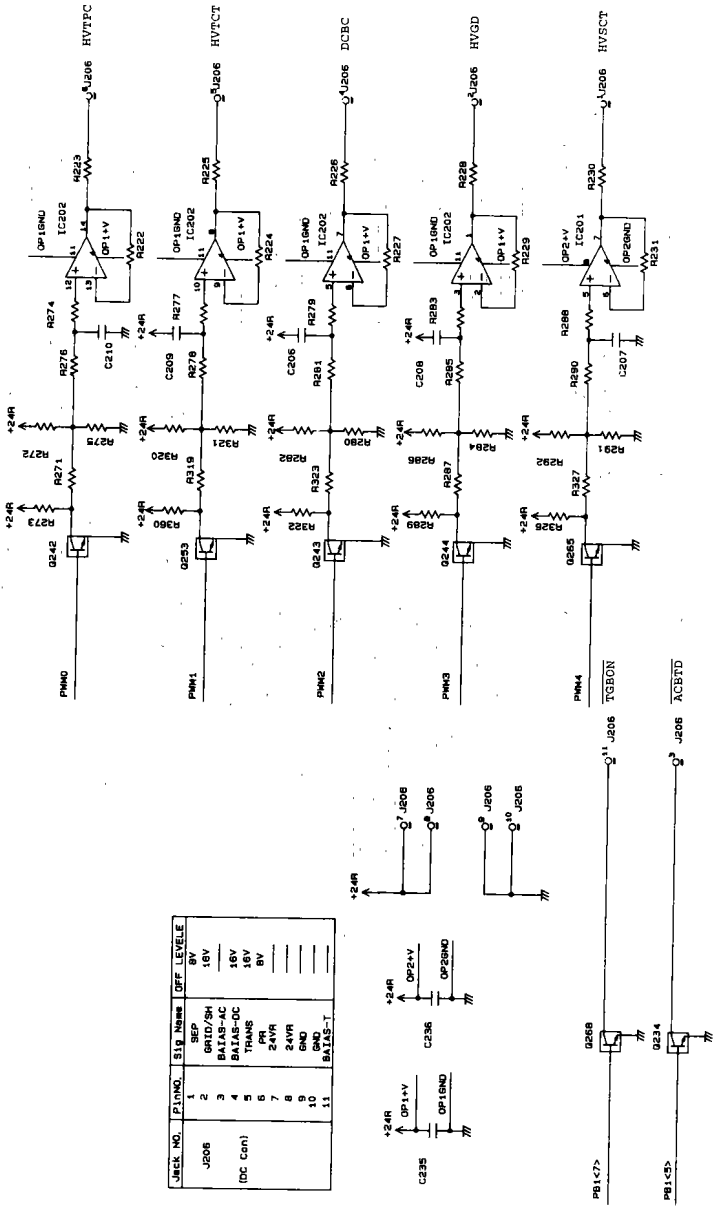

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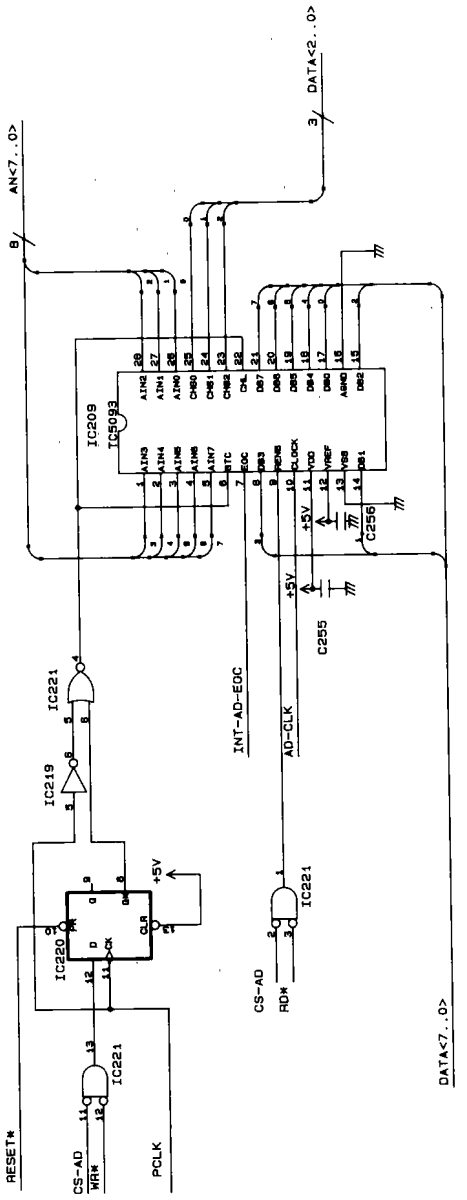

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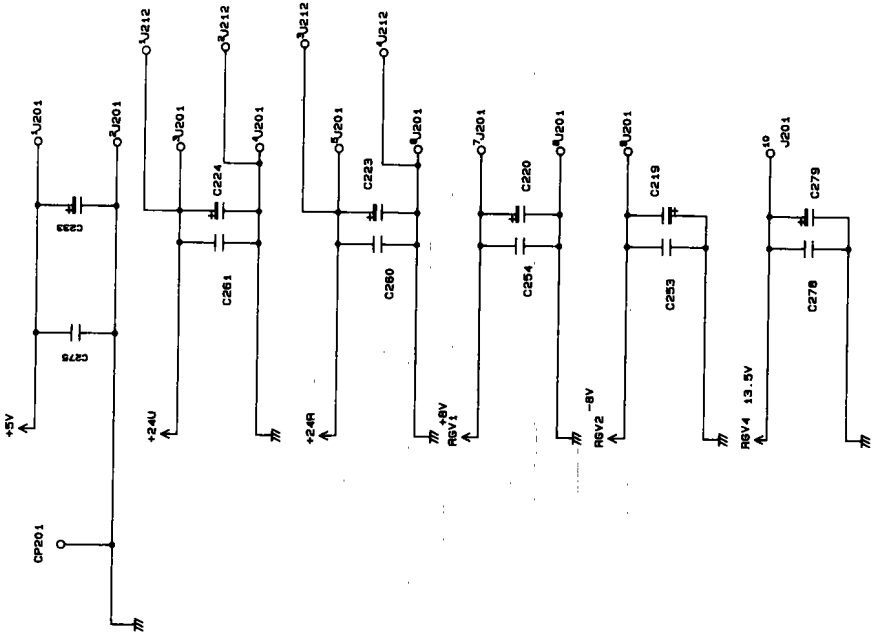

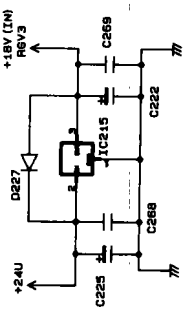

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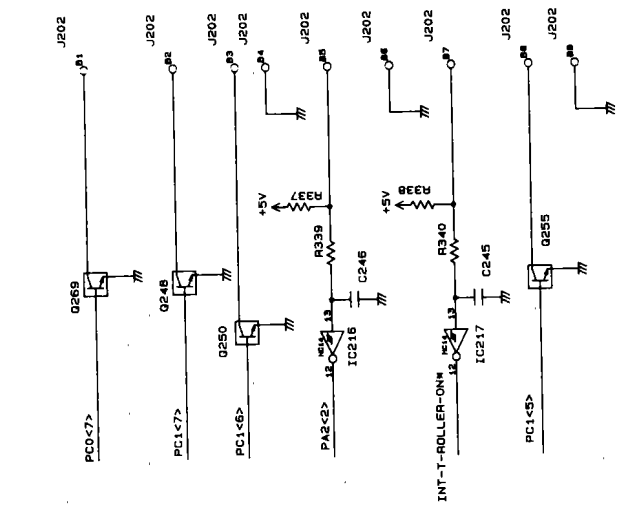

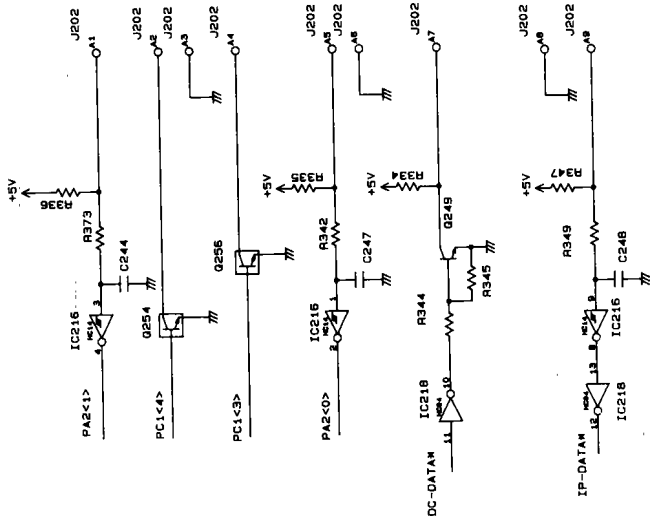

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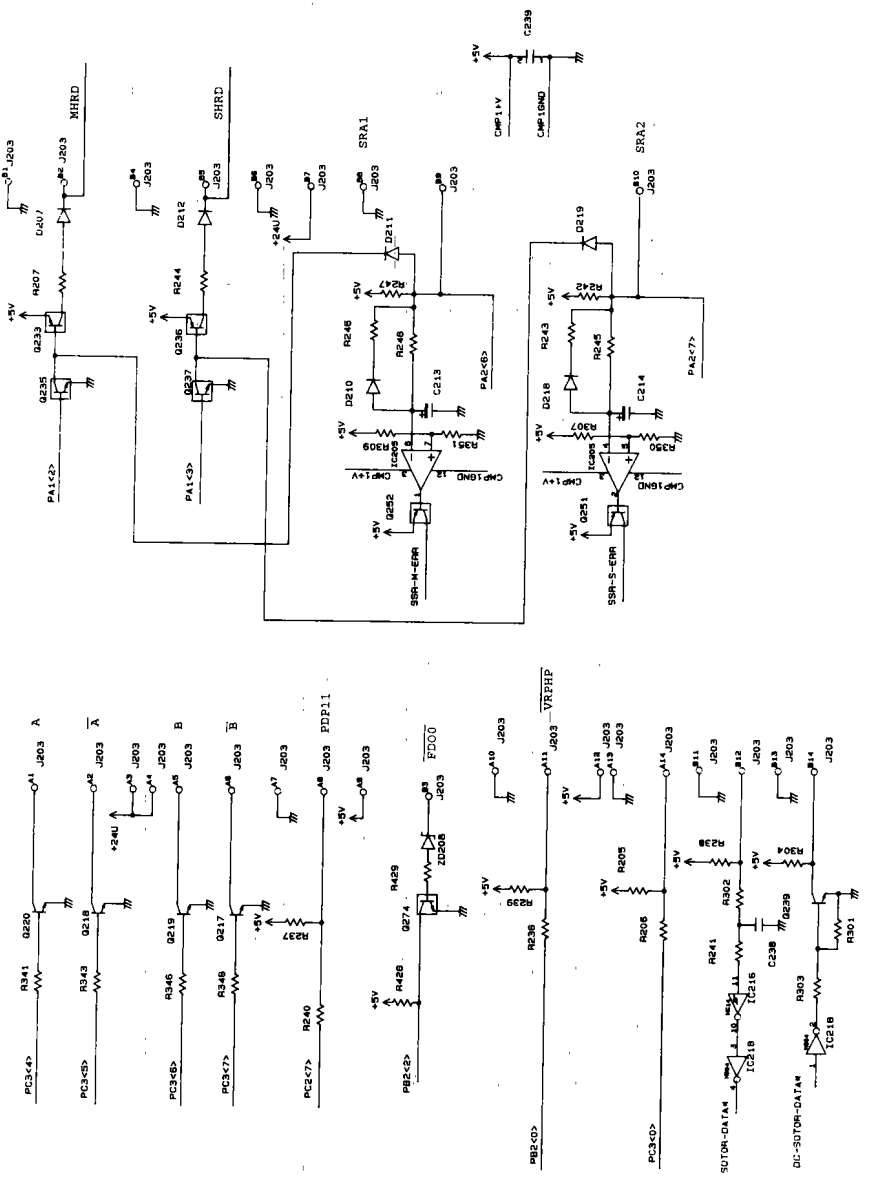

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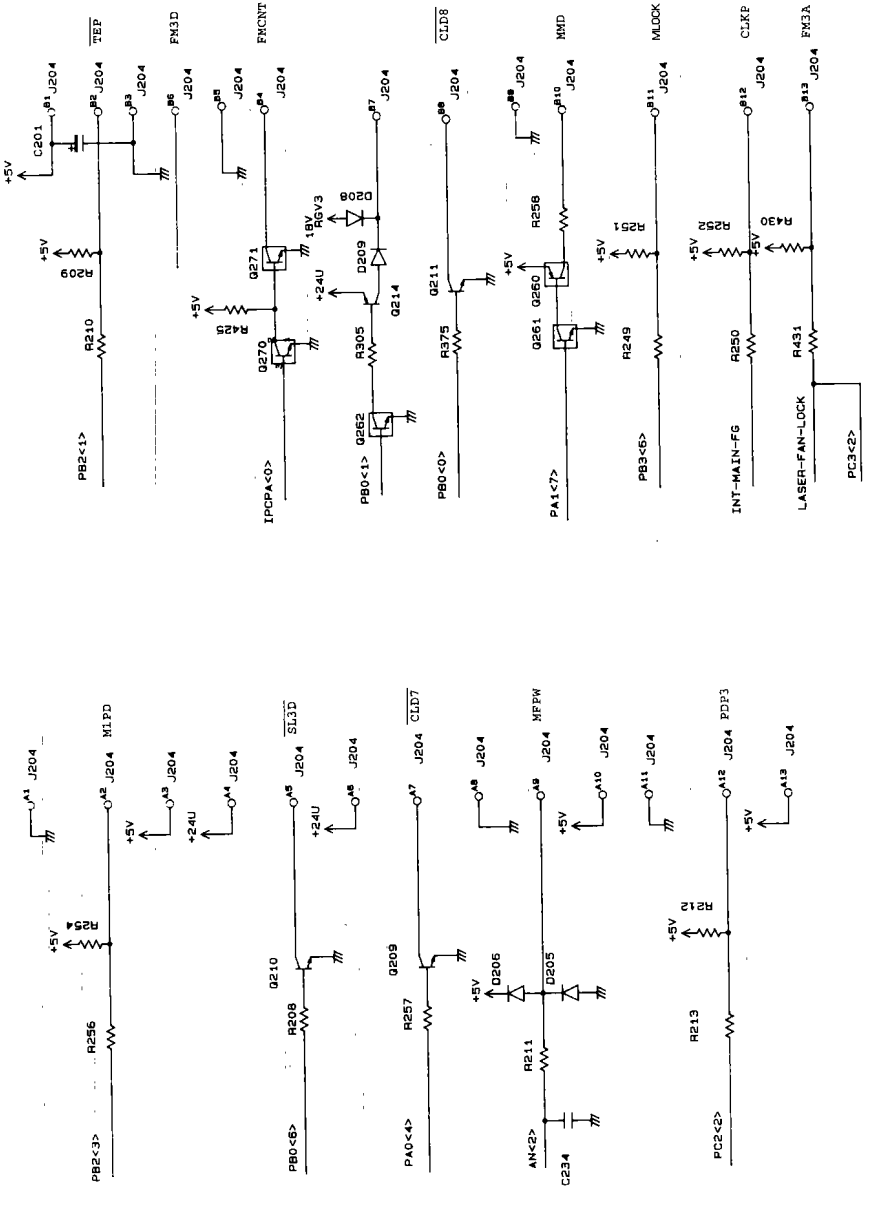

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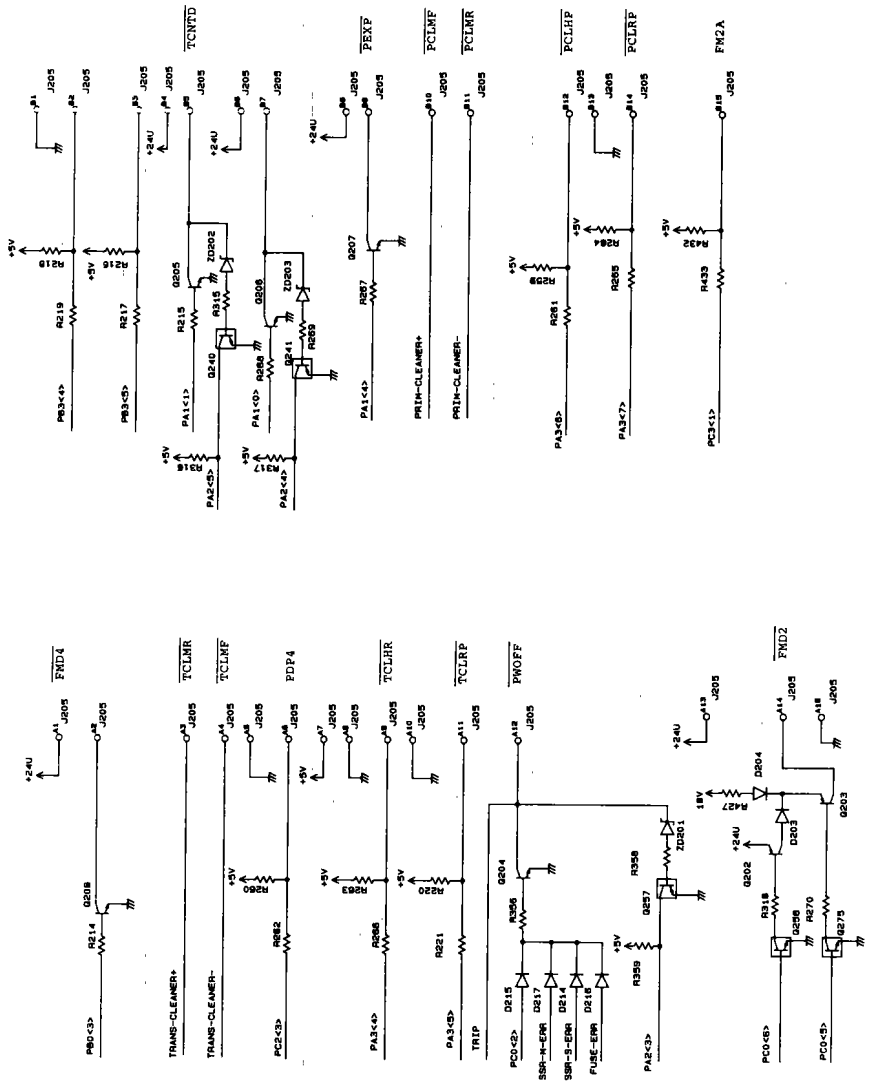
DC Controller Circuit Diagram (14/20)



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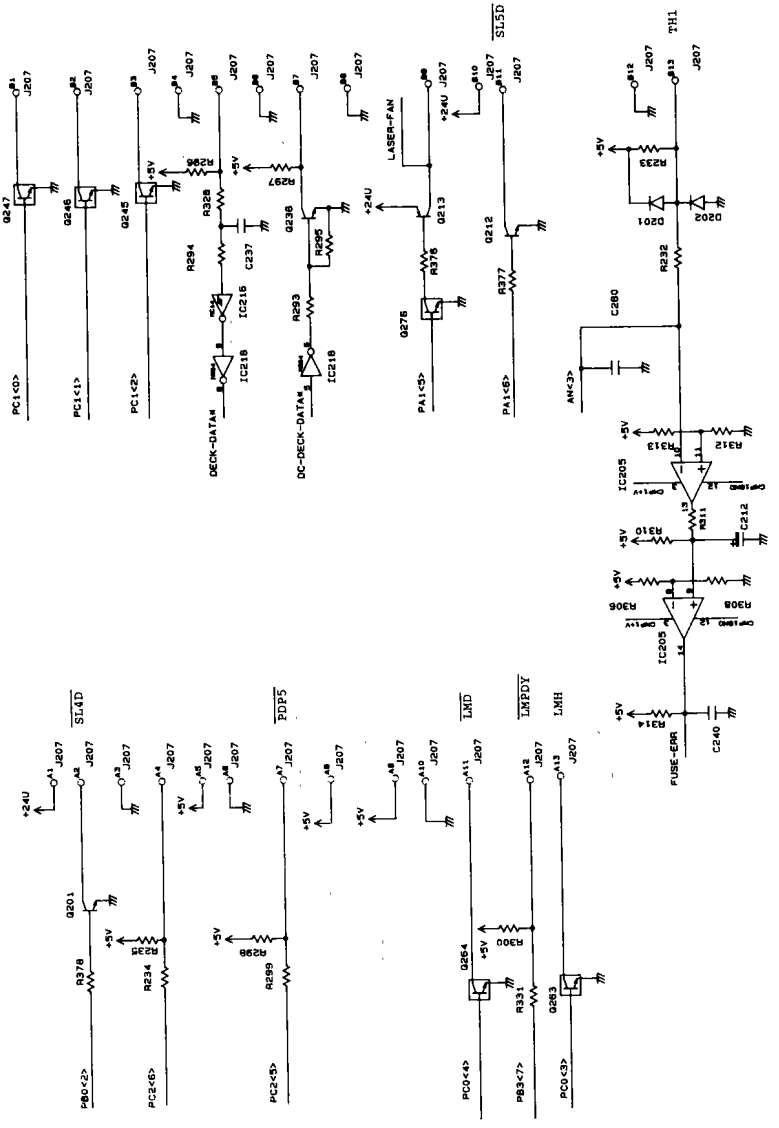

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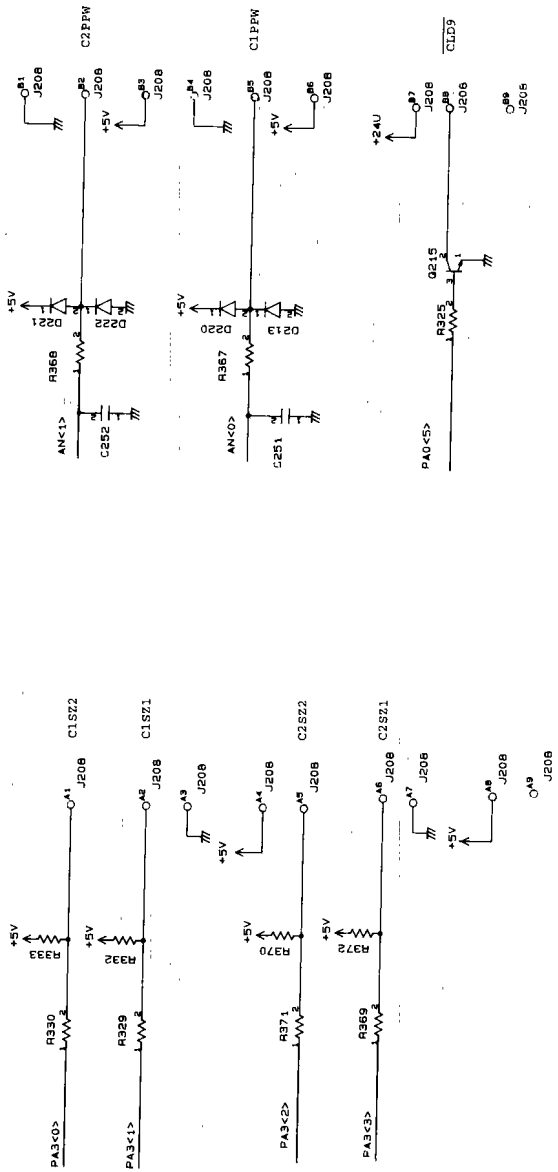

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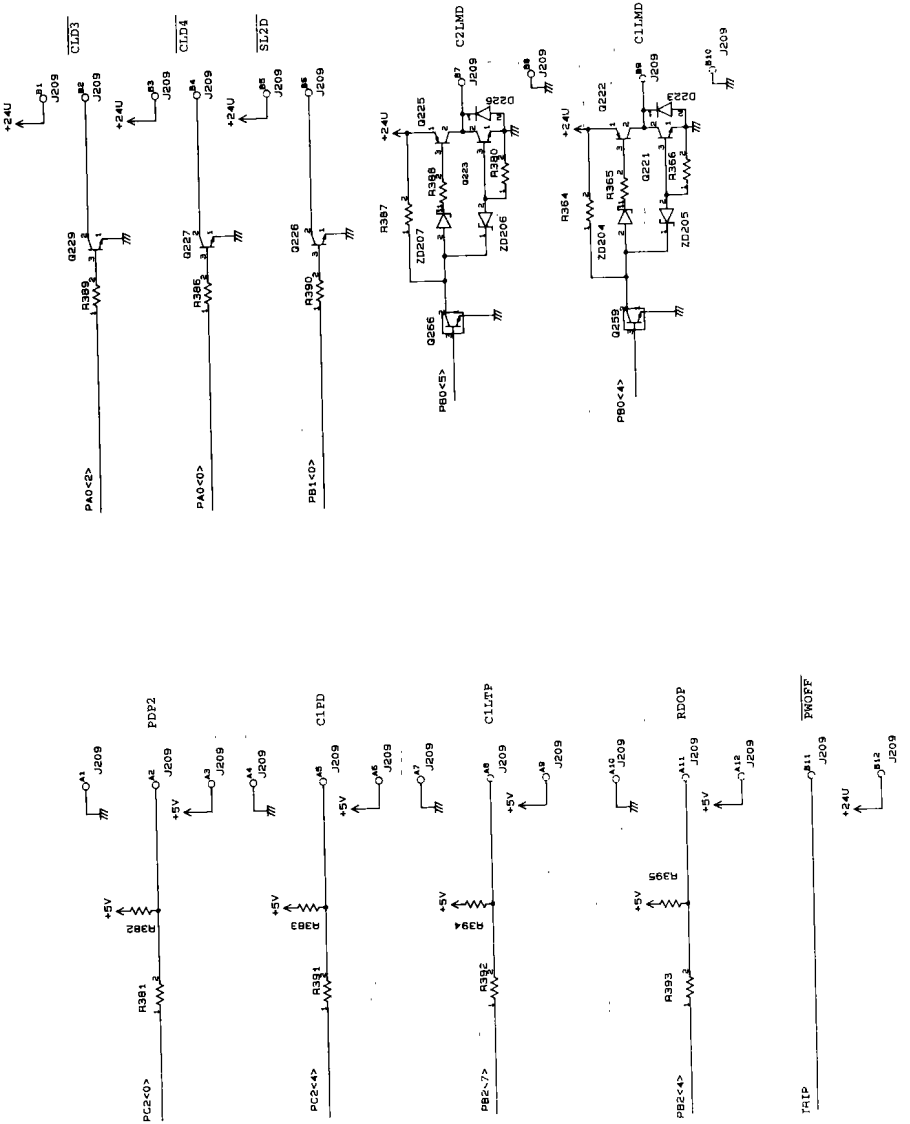

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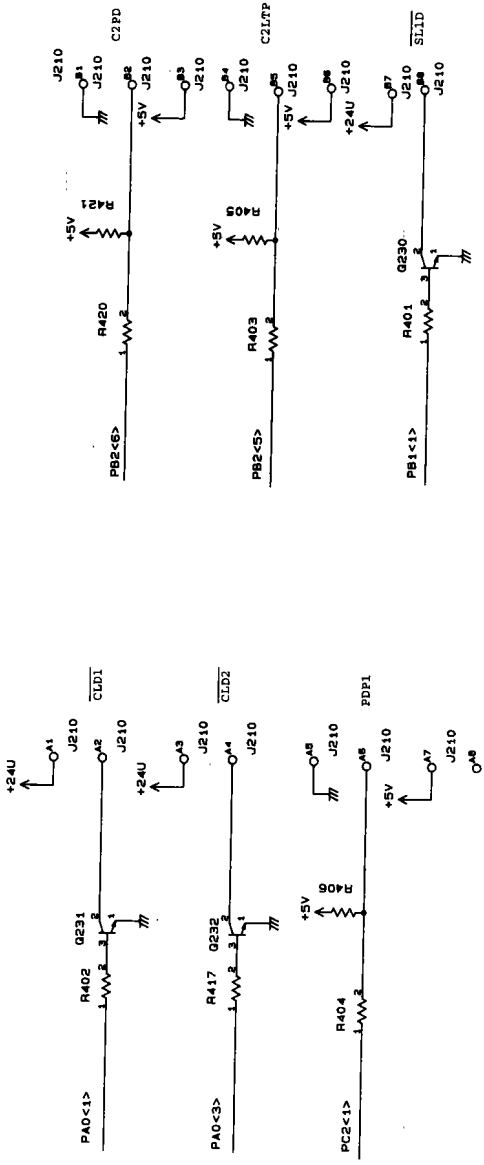

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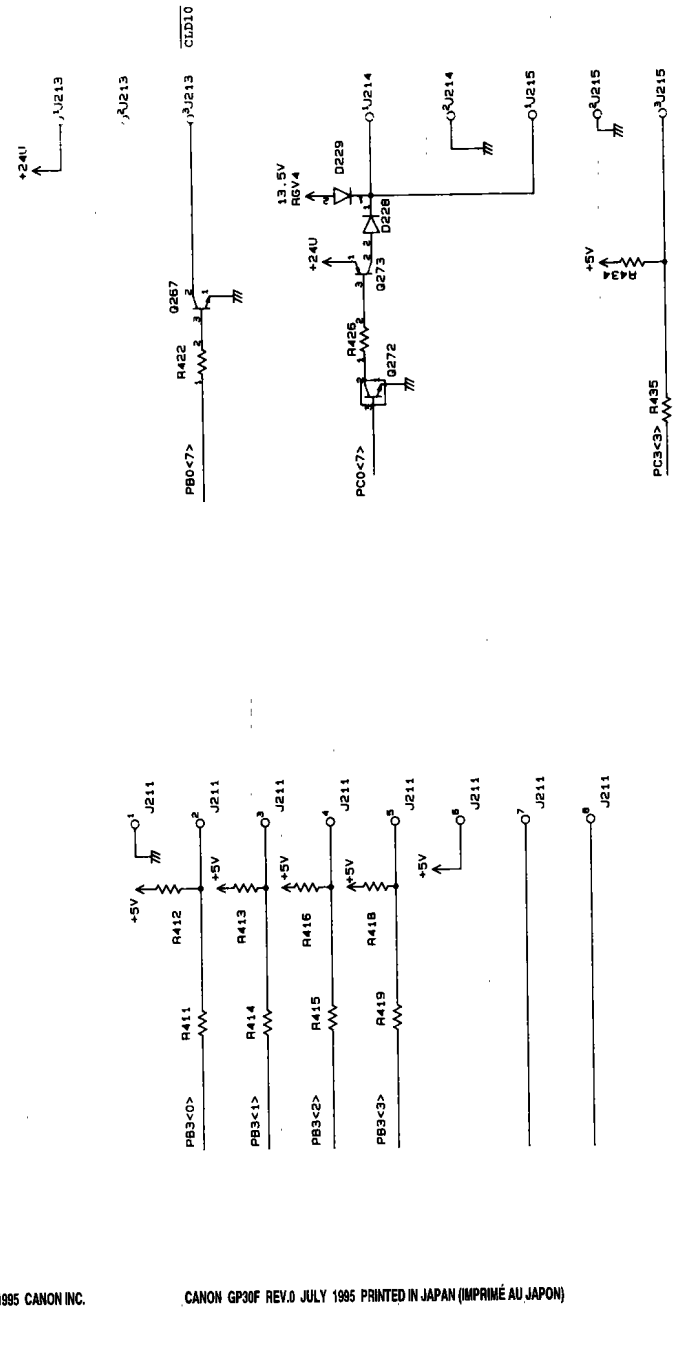

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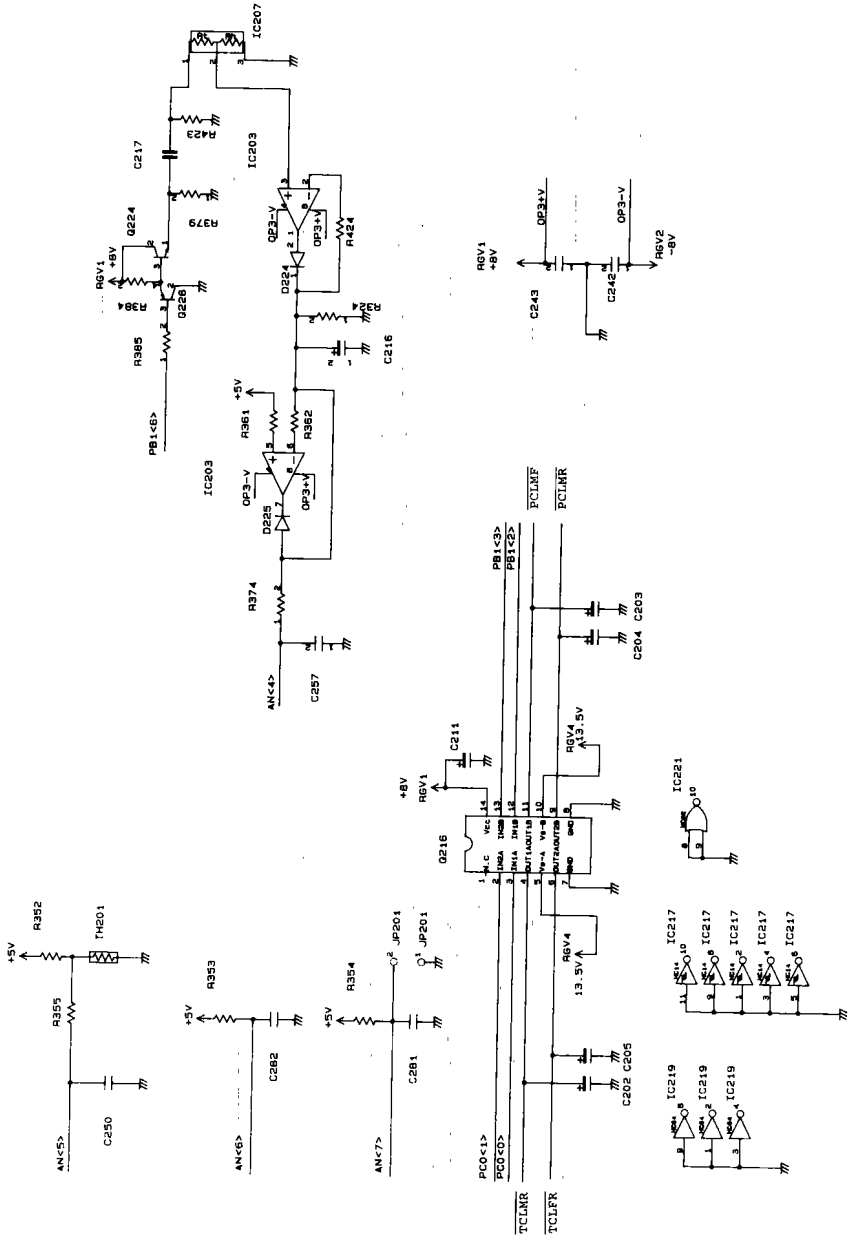

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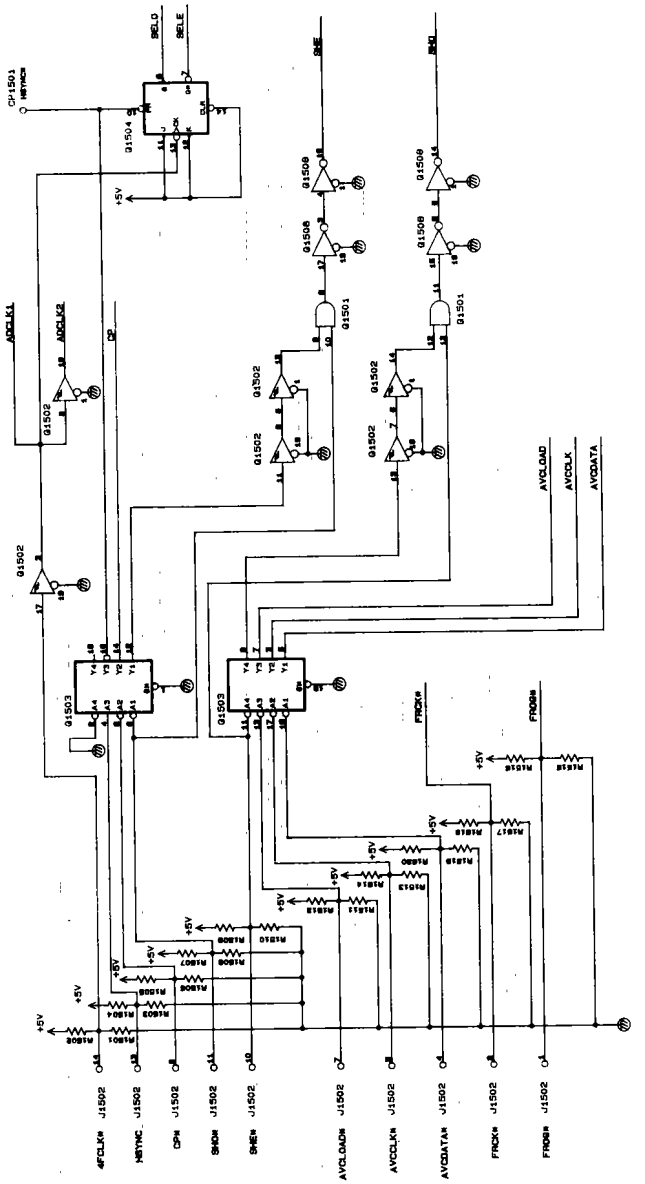
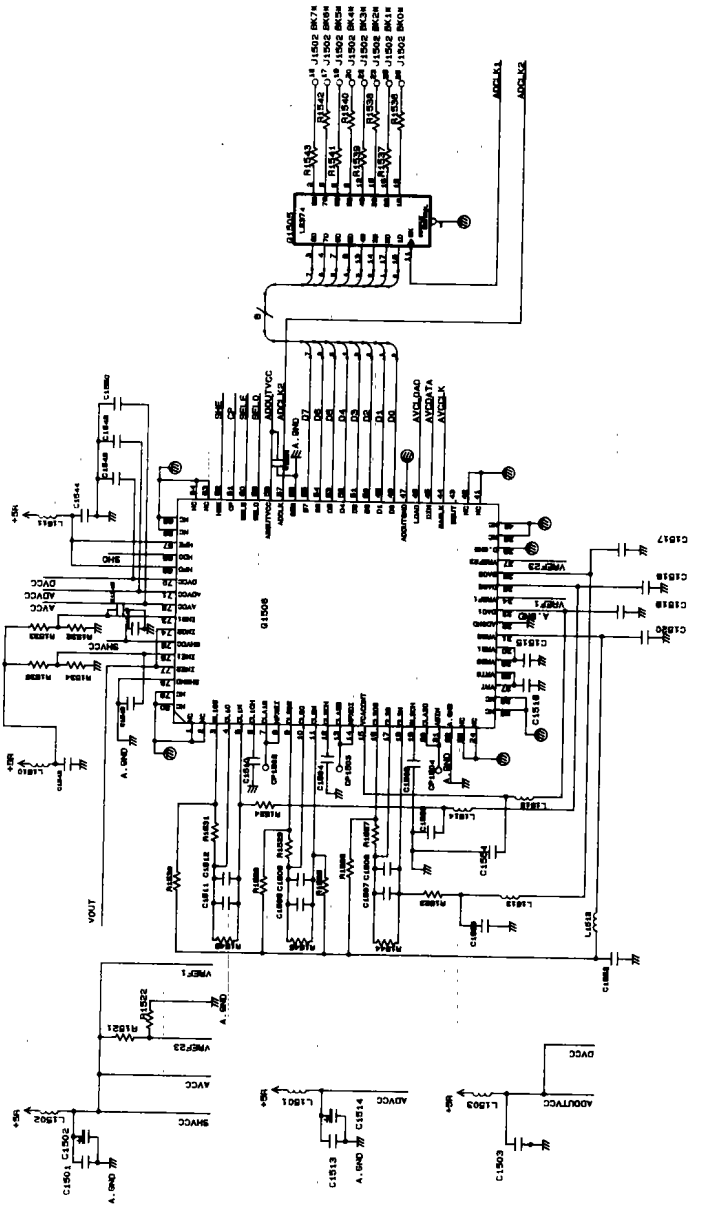
E. ANALOG PROCESSOR CIRCUIT DIAGRAM

Analog Processor Circuit Diagram (1/4)





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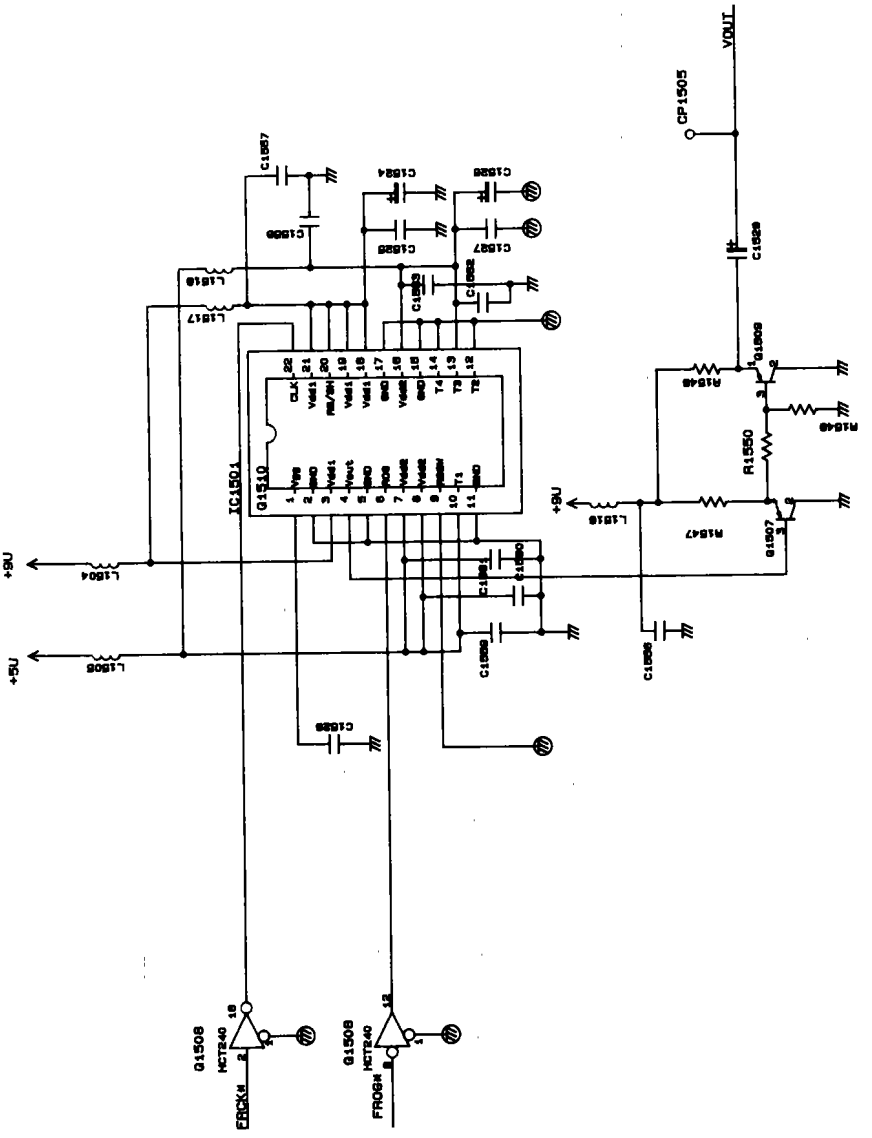
VOUT
CP1505
C1557
C1558
C1559
C1560
C1561
C1562
C1563
C1564
C1565
C1566
C1567
C1568
C1569
C1570
C1571
C1572
C1573
C1574
C1575
C1576
C1577
C1578
C1579
C1580
C1581
C1582
C1583
C1584
C1585
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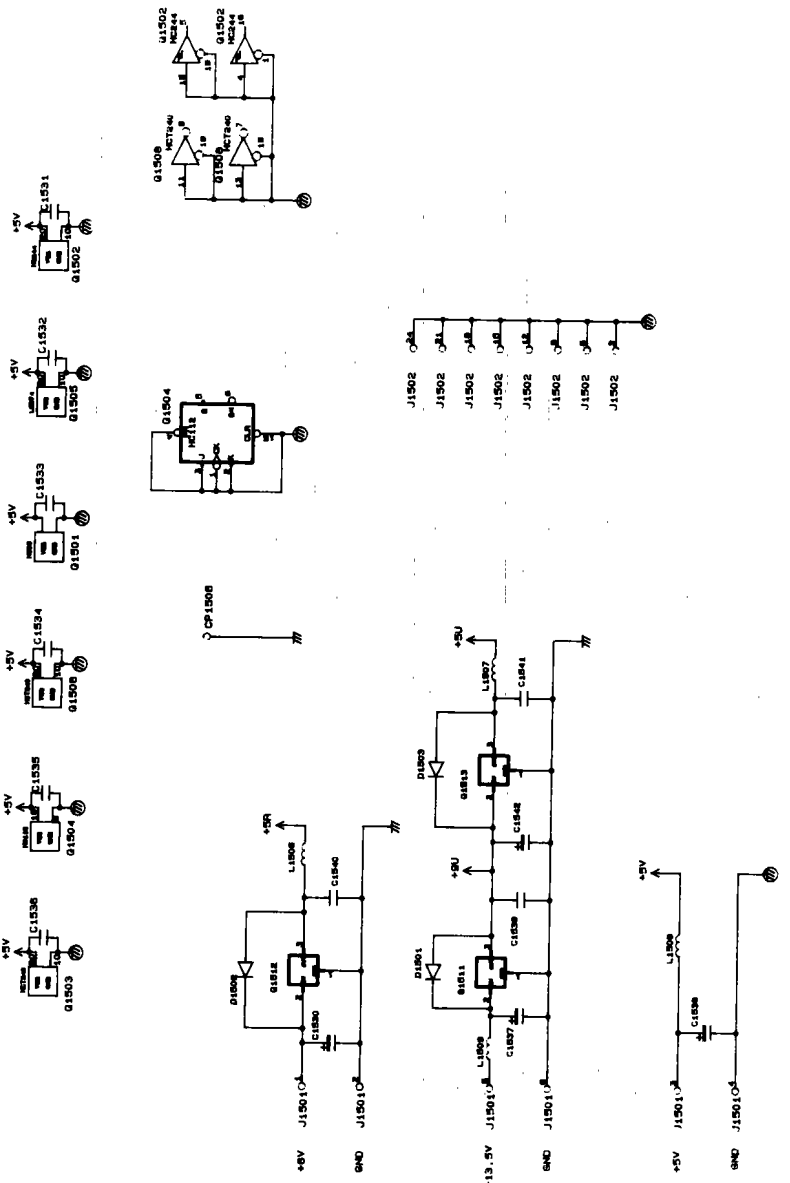
C1592
C1593
C1594
C1595
C1596



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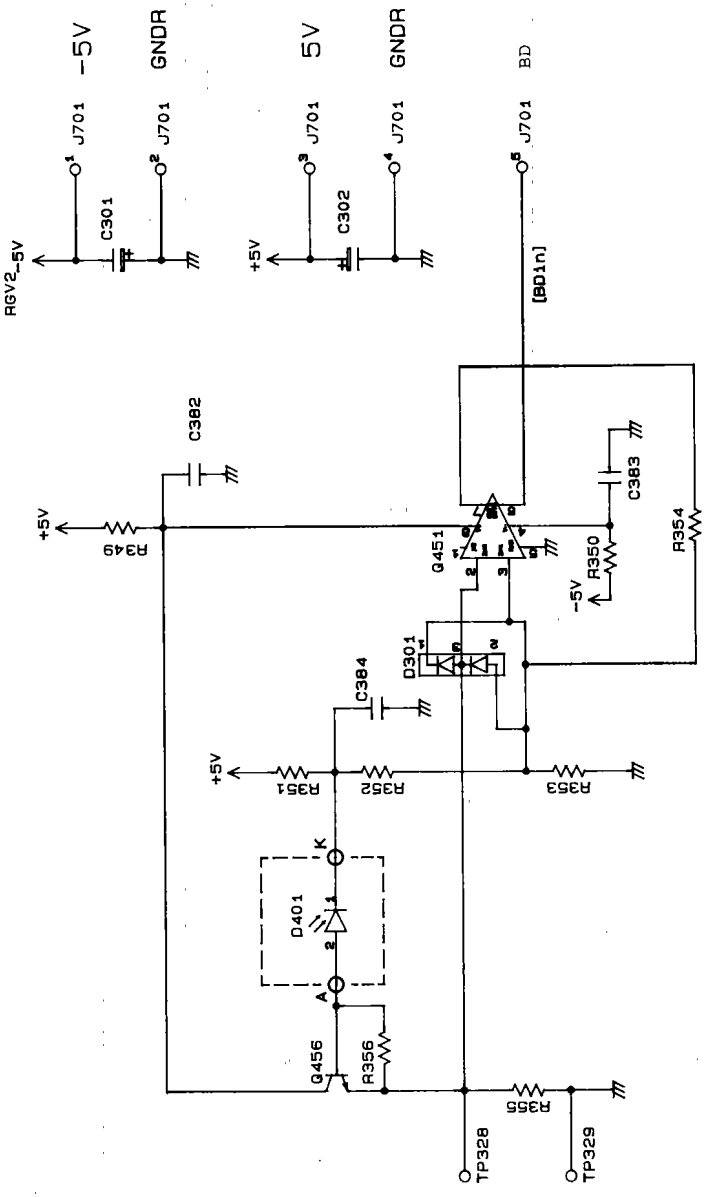
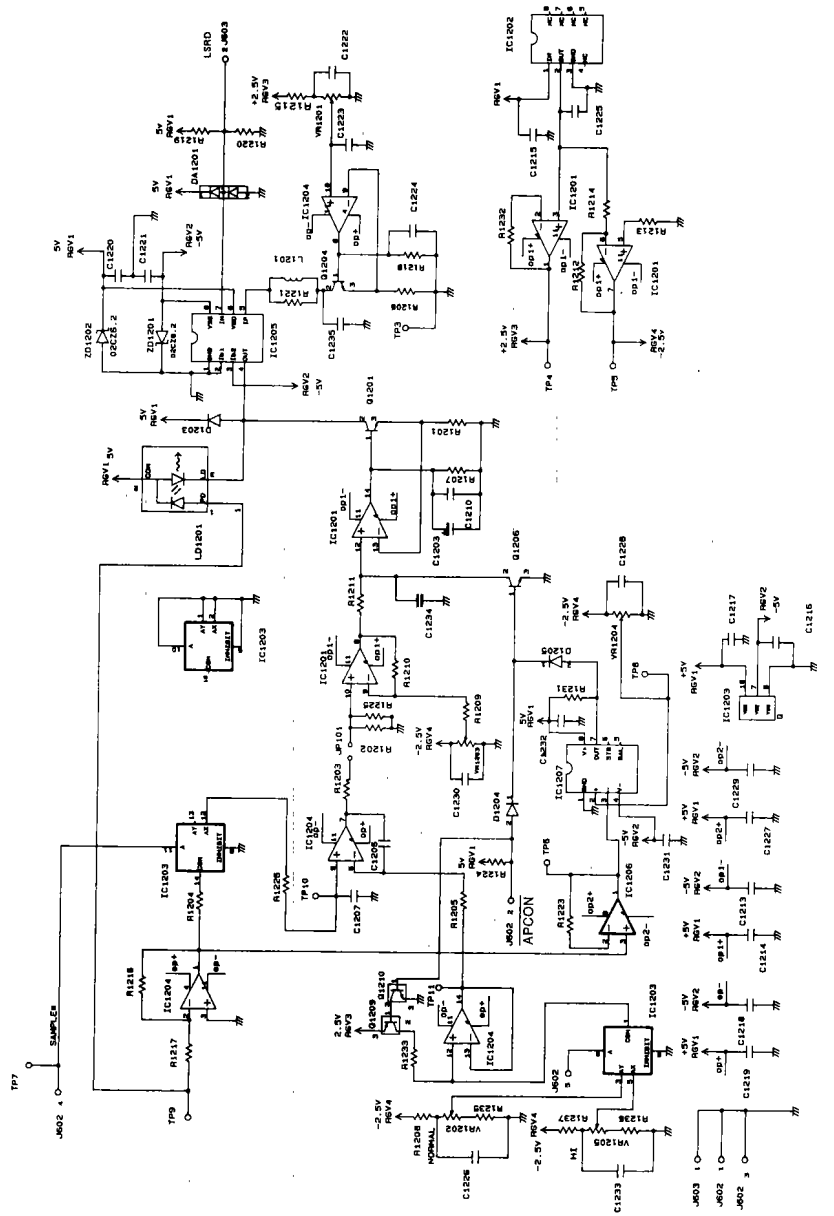
F. BD DETECTION CIRCUIT DIAGRAM



G. LASER DRIVER CIRCUIT DIAGRAM

Laser Driver Circuit Diagram (1/2)



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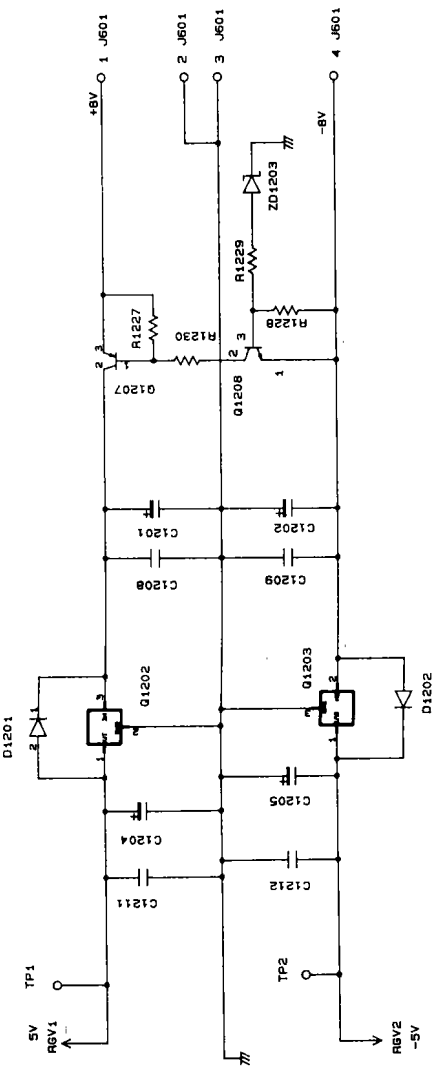

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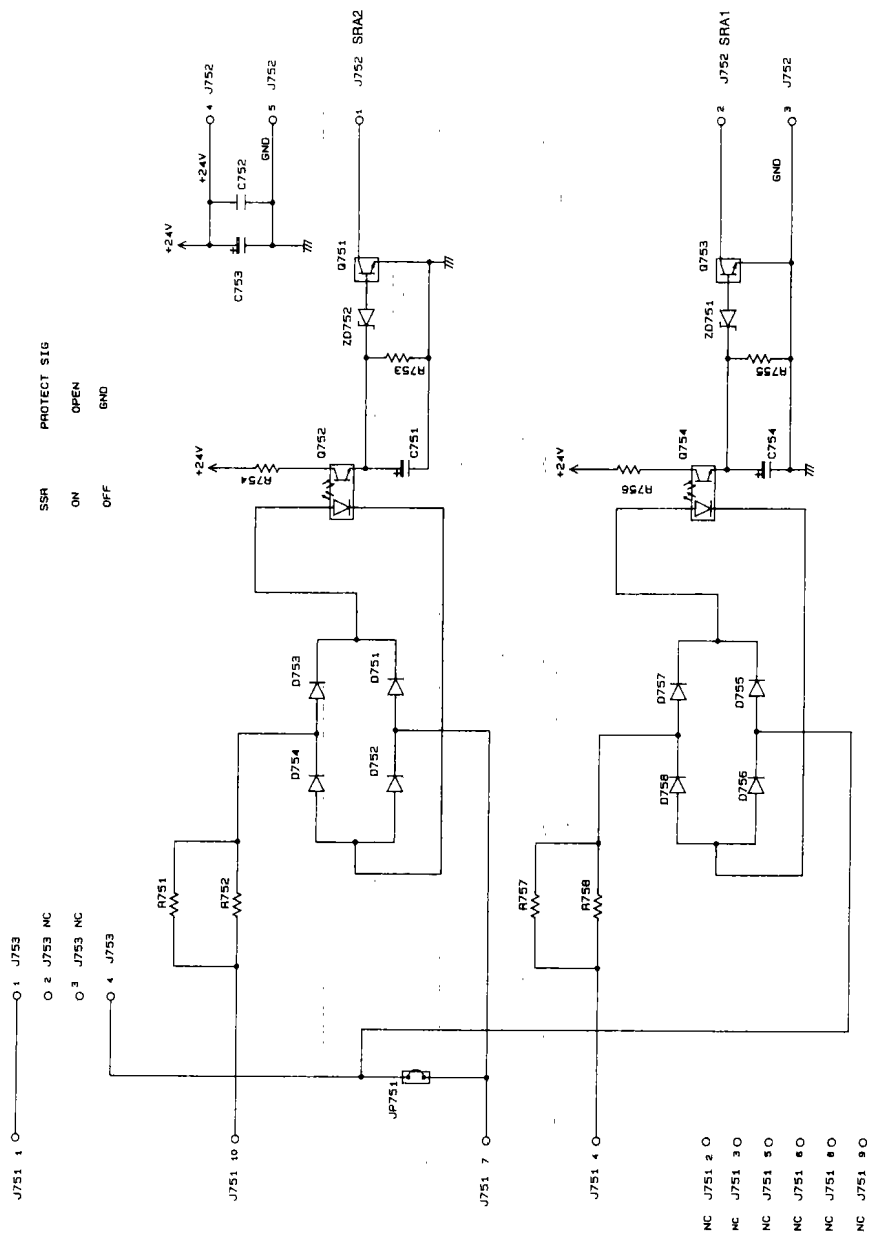
H. SSR ERROR DETECTION CIRCUIT DIAGRAM



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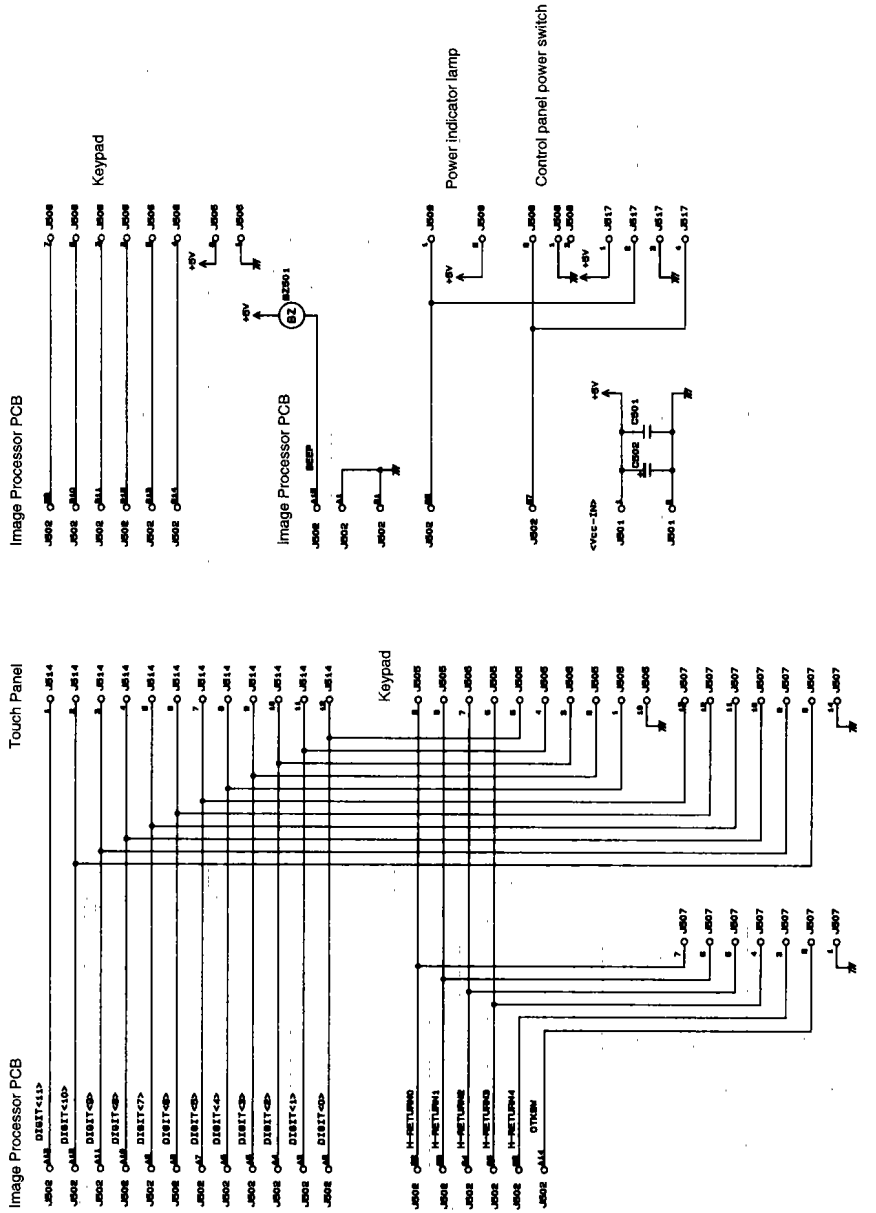
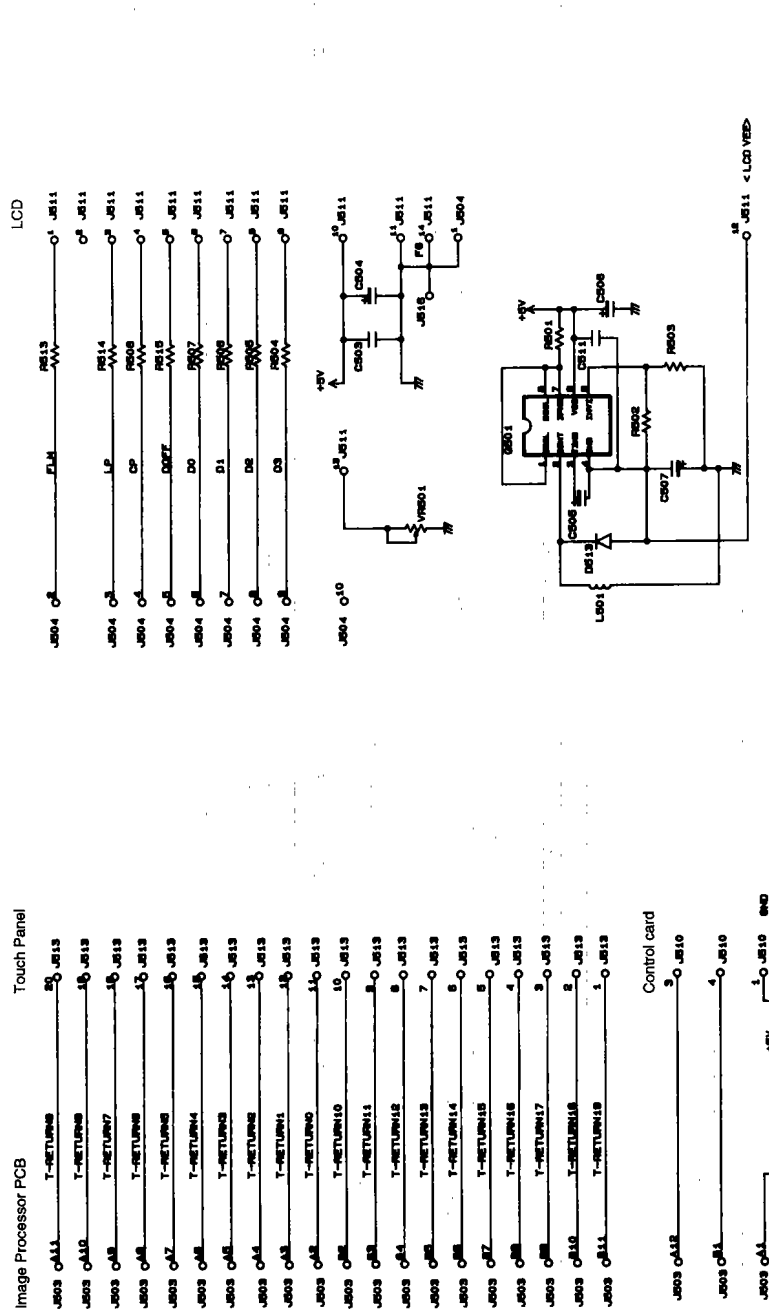
I. CONTROL PANEL CIRCUIT DIAGRAM

Control Panel Circuit Diagram (1/3)





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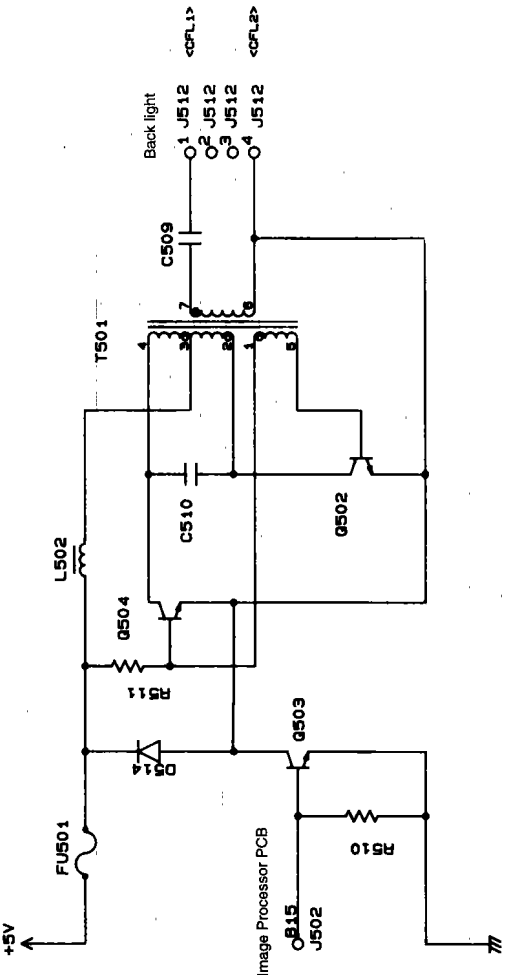

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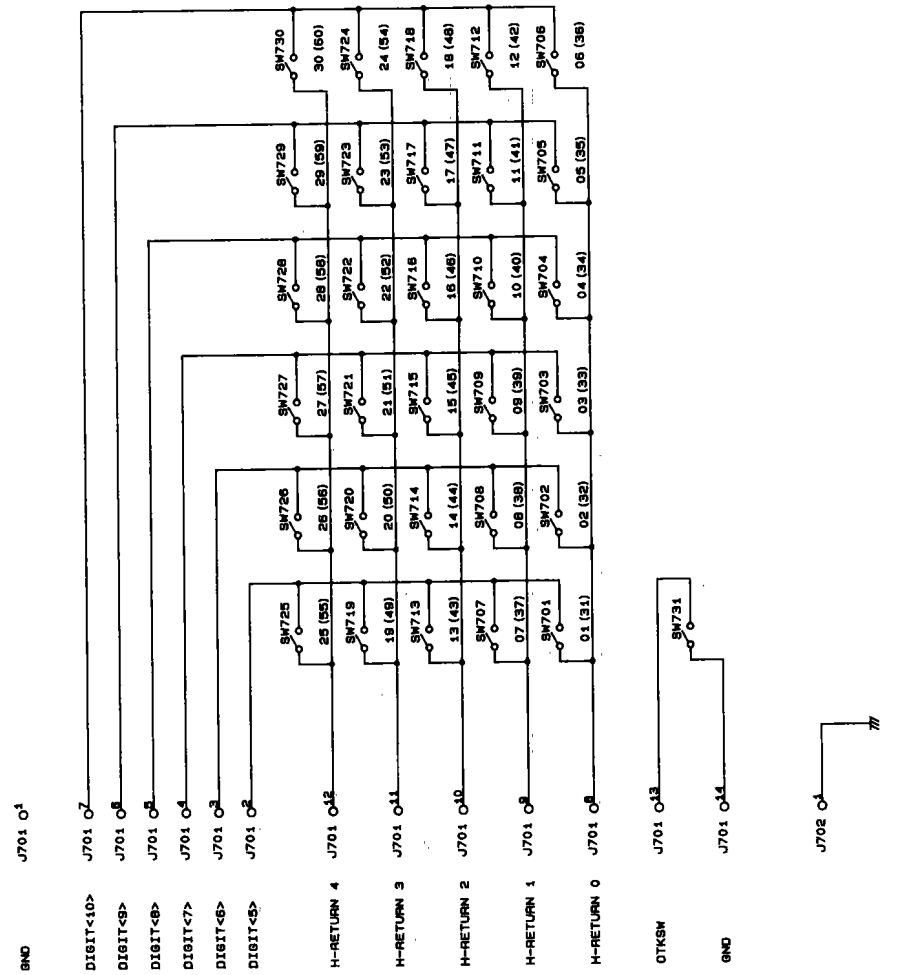
J. ONE TOUCH KEY CIRCUIT DIAGRAM



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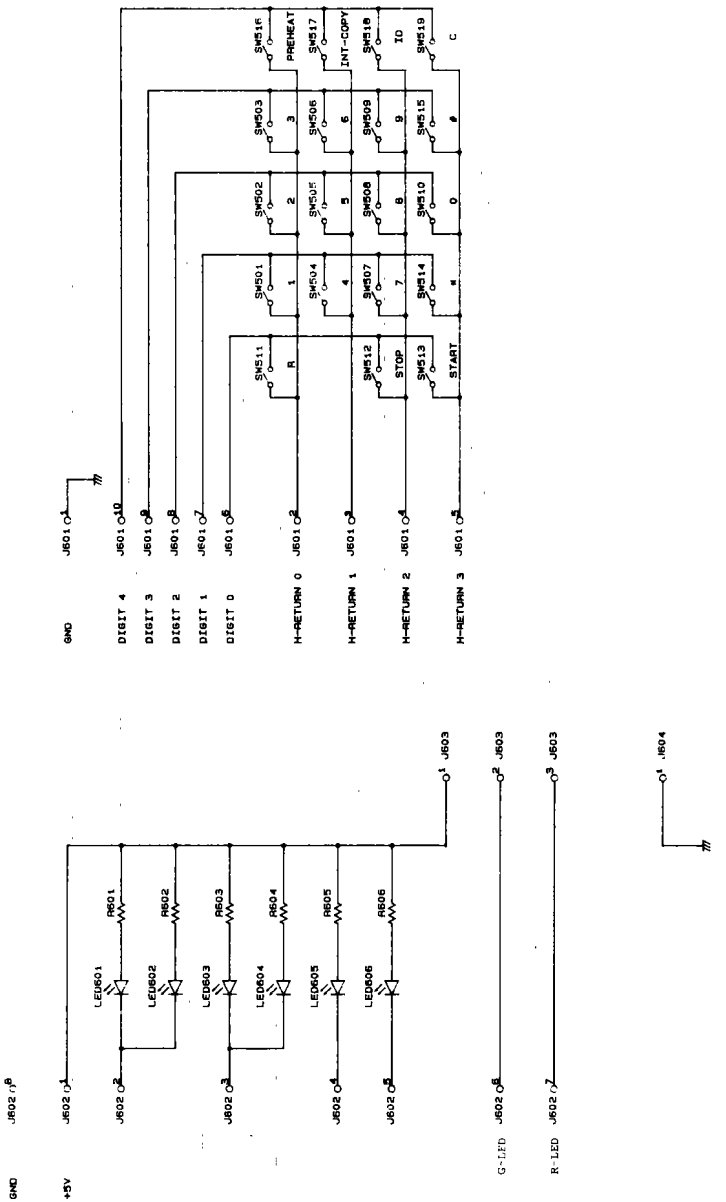
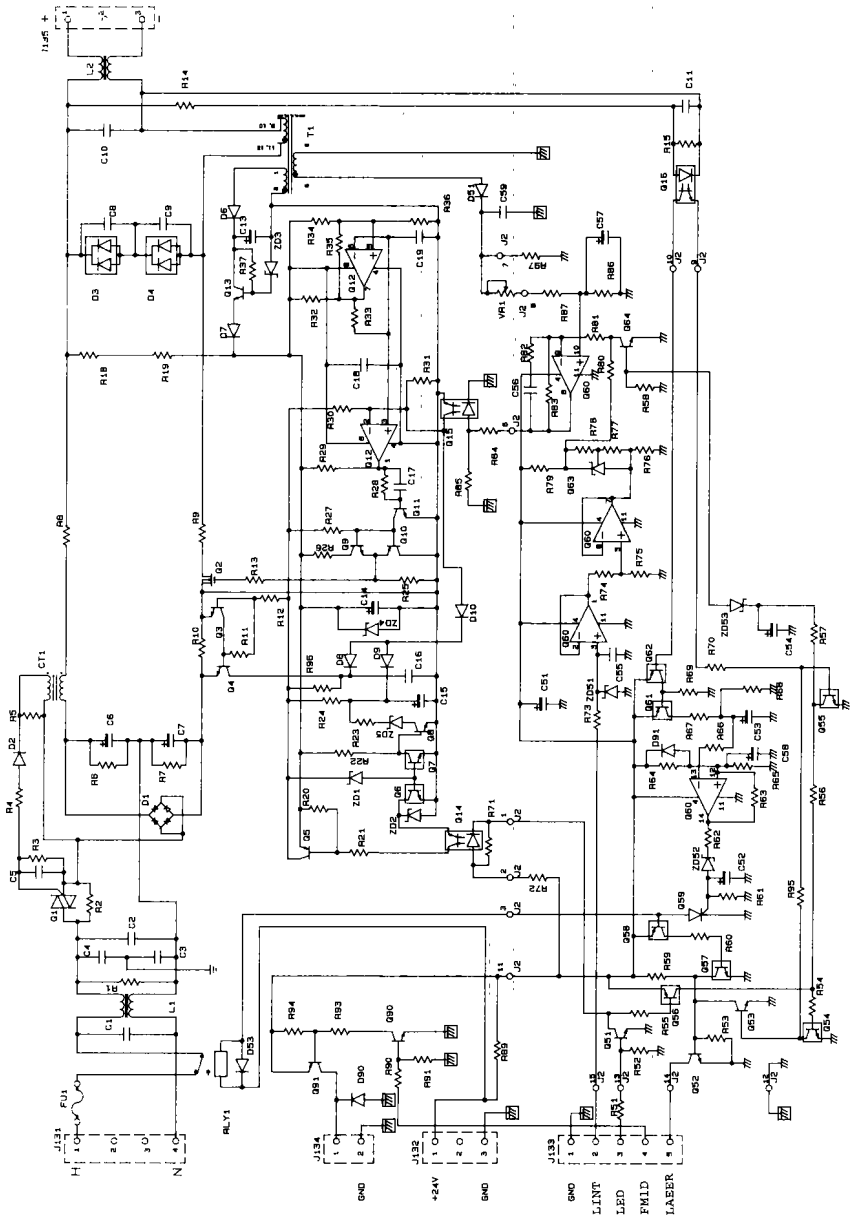

GND
DIGIT 4
DIGIT 3
DIGIT 2
DIGIT 1
DIGIT 0
H-RETURN 0
H-RETURN 1
H-RETURN 2
H-RETURN 3
SM501
SM502
SM503
SM504
SM505
SM506
SM507
SM508
SM509
SM510
SM511
SM512
SM513
SM514
SM515
SM516
SM517
SM518
SM519
R
STOP
START
PREHEAT
INT-COPY
ID
C
LED601
LED602
LED603
LED604
LED605
LED606
R601
R602
R603
R604
R605
R606
+5V
G-LED
R-LED

L. LAMP REGULATER CIRCUIT DIAGRAM



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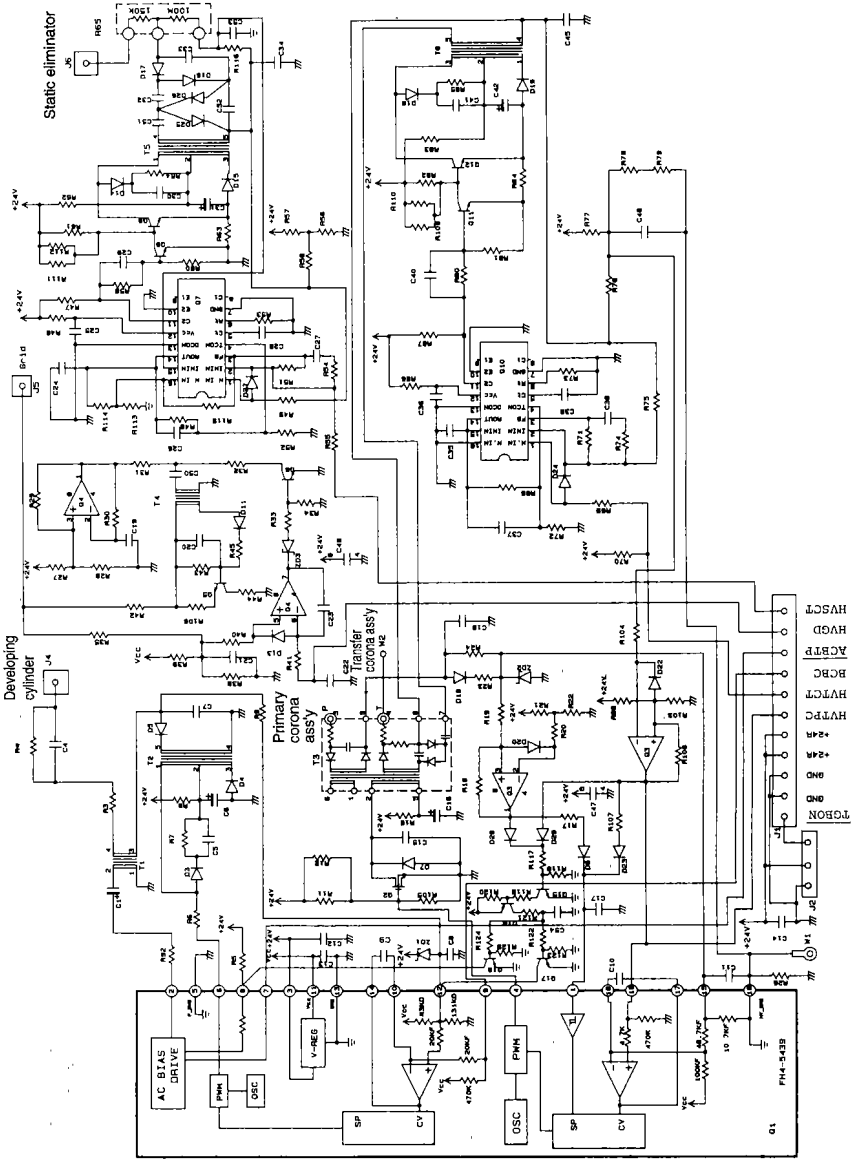
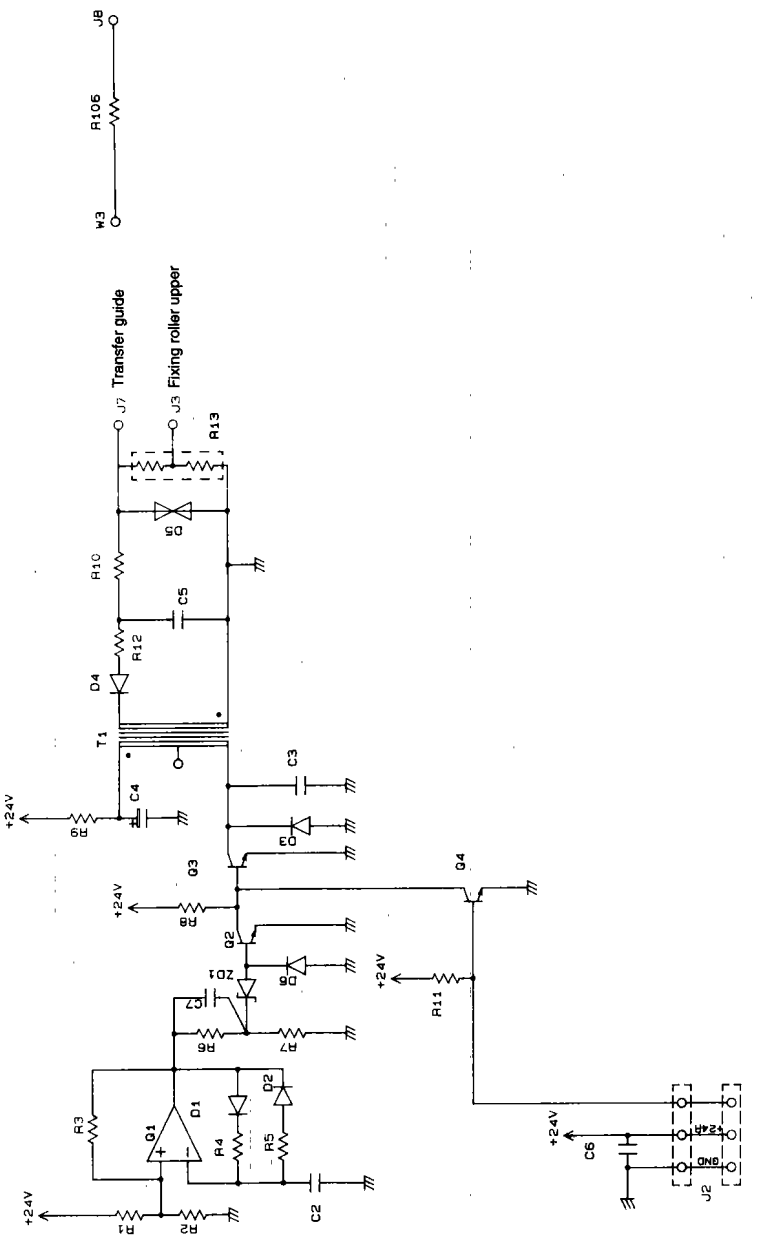
M. HIGH-VOLTAGE TRANSFORMER CIRCUIT DIAGRAM



N. HIGH-VOLTAGE TRANSFORMER 2 CIRCUIT DIAGRAM



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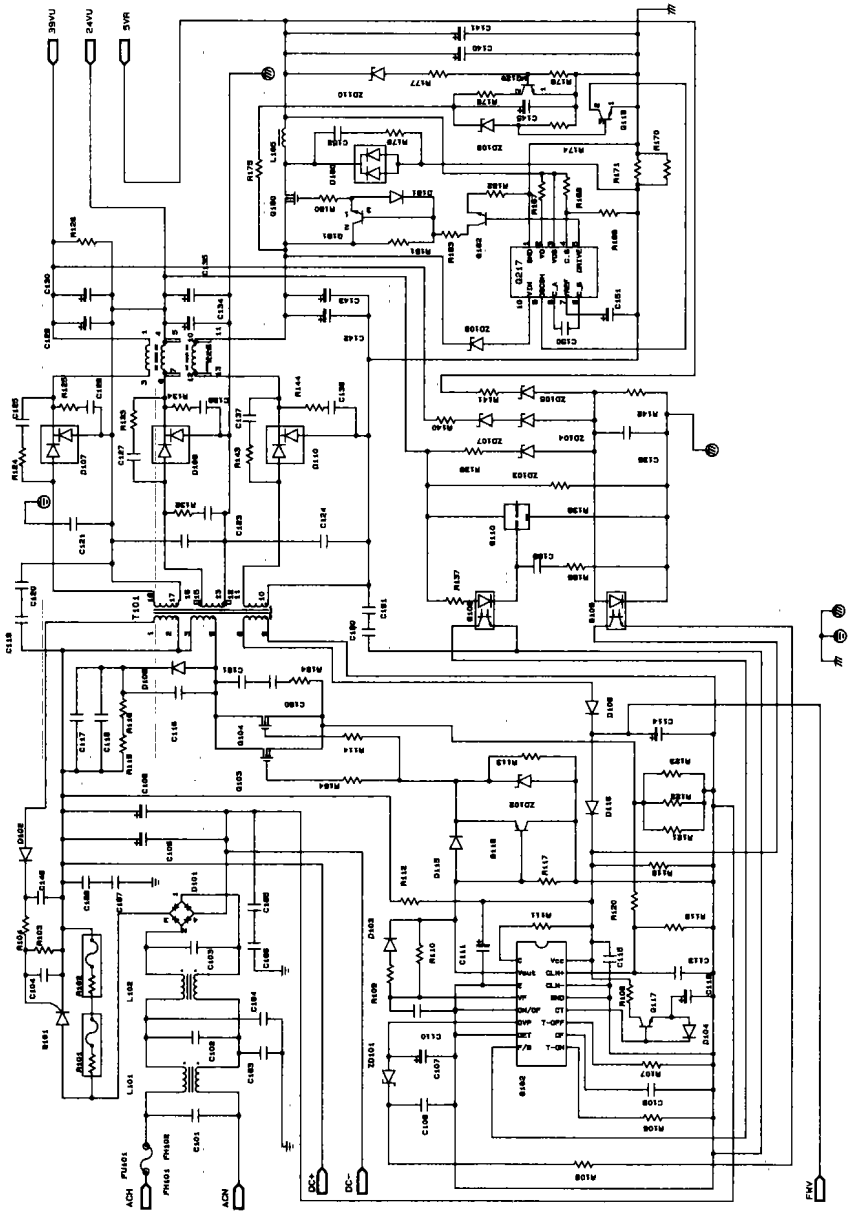
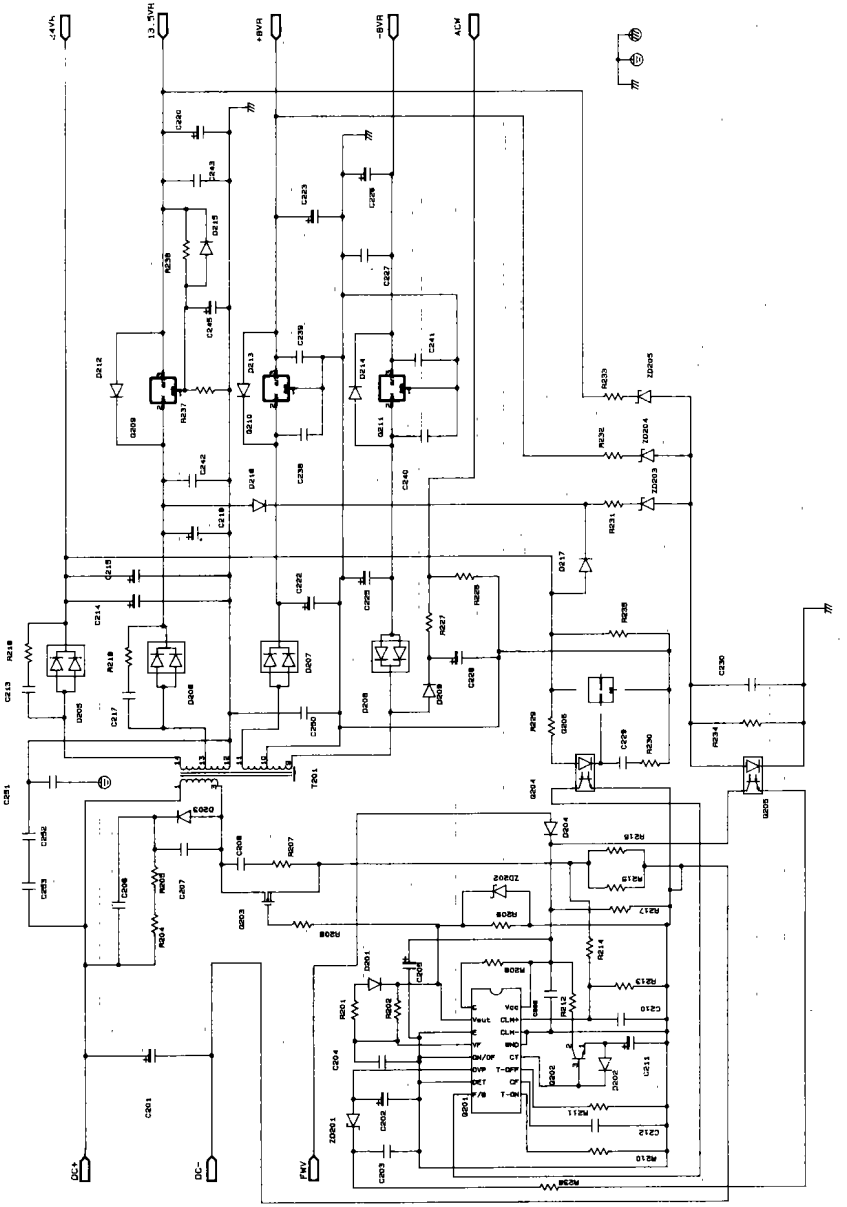
O. DC POWER SUPPLY CIRCUIT DIAGRAM

DC Power Supply Circuit Diagram (1/3)



DC Power Supply Circuit Diagram (2/3)



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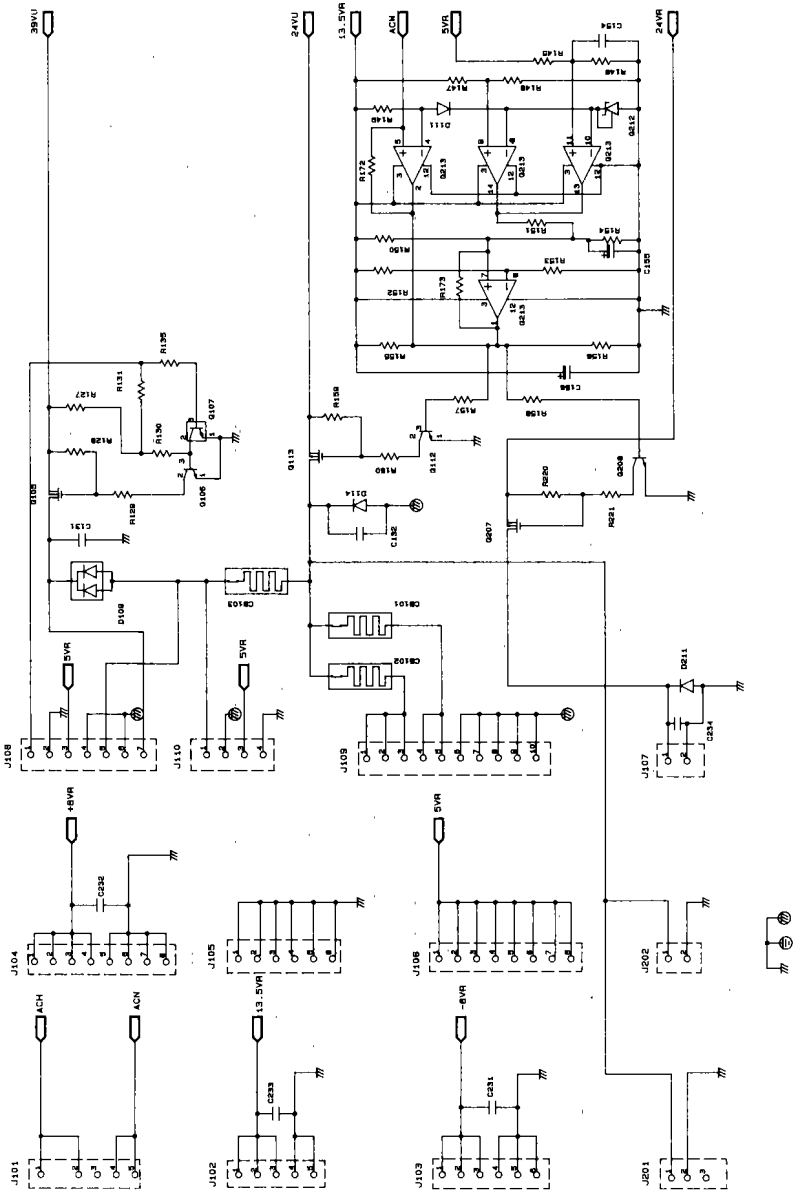

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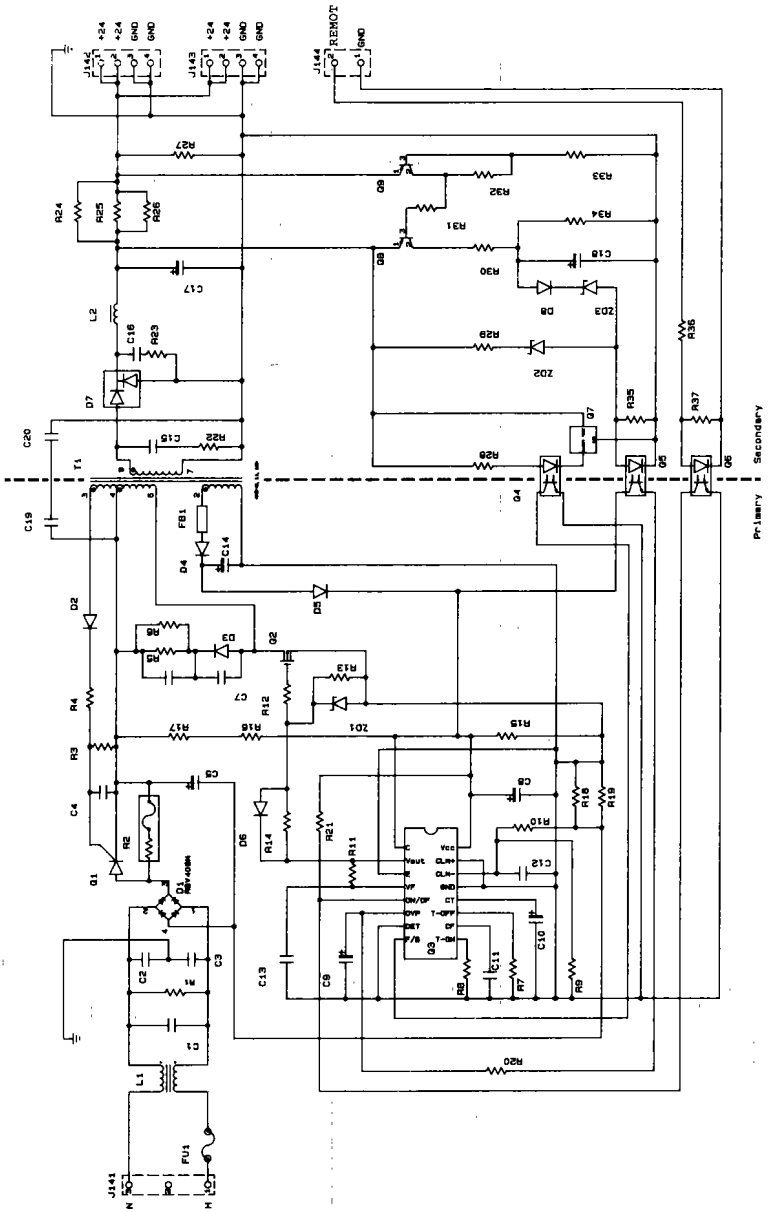
P. POWER SUPPLY FOR OPTION CIRCUIT DIAGRAM



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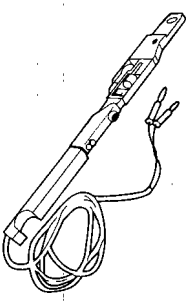
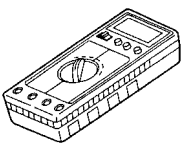
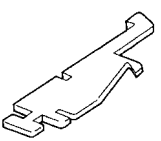
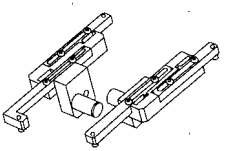
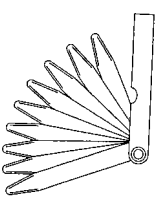
Q. SPECIAL TOOLS TABLE

See the table below for a list of special tools used to service the copier in addition to the standard tools set.

No.	Tool name	Tool No.	Shape	Designation*	Description
1	Laser Power Checker	FY9-4008-000		A	Use it to adjust the laser intensity of the laser unit; use it together with the Digital Multimeter.
2	Digital Multimeter	FY9-2002-000		A	Use it to check the power; use it together with the Laser Power Checker when adjusting the laser intensity.
3	Door Switch	TKN-0093		A	
4	Mirror Positioning Tool (front, rear)	FY9-3002-000		B	Use it to adjust the distance between No. 1 and No. 2 mirrors.
5	Gap gauge	CK-0057-000		A	Use it to adjust the gap next to the developing blade.

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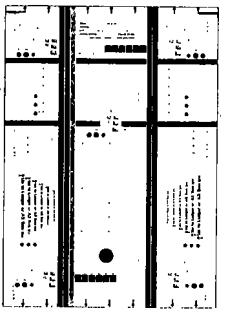
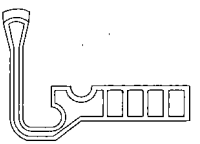
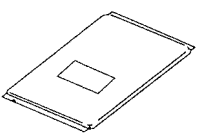
No.	Tool name	Tool No.	Shape	Designation*	Description
6	NA-3 Test Sheet	FY9-9196-000		A	Use it to check or adjust the images.
7	Cleaning Oil SS-06	TKN-0464-000		A	Use it to lubricate the fixing roller; 10 packs/box.
8	Mirror cleaning tool	FY9-3003-000		B	Use it to clean the No. 1 and No. 2 mirrors.
9	Standard white paper set	FY9-3004-000		B	Use it for shading correction; 20 sheets/pack.

*Quantity Designation
A: each service person is expected to carry one.
B: each group of five service persons is expected to carry one.
C: each work shop is expected to keep one.

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R. SOLVENTS/OILS TABEL

No.	Name	Uses	Composition	Remarks
1	Ethyl alcohol (Ethanol) Isopropyl alcohol (Isopropanol).	Cleaning: e.g., glass, plastic, rubber parts; external covers	C_2H_5O $(CHZ_3)_2$ CHOH	• Do not bring near fire. • Procure locally. • Isopropyl alcohol may be substituted.
2	MEK	Cleaning: e.g., metal; oil or toner dirt	$CH_3COC_2H_5$ Methylethyl ketone	• Do not bring near fire. • Procure locally.
3	Heat-resisting grease	Lubricating: fixing drive assemblies	Lithium soap (mineral oil family) Molybdenum bisulfate	• CK-0427 (500 g/can)
4	Lubricating oil	Lubricating: scanner rail, spring clutch	Mineral oil (paraffin family)	• CK-0451 (100 cc)
5	Lubricating oil	Lubricating: pick-up assembly roller bushing (FS2-1005-000)	Mineral oil (paraffin family)	• CK-0524 (100 cc)
6	Lubricating oil	Lubricating: drive and friction parts	Silicone oil	• CK-0551 (20 g)

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